



Radial Cement Bond
Gamma Ray
Casing Collar Log

Company Kerr-McGee Oil & Gas Onshore, L.P.

Well Azul 13-21HZ

Field Wattenberg

County Weld State Colorado

Location: API #: 05-123-46115

SEC 13 TWP 1N RGE 66W

Permanent Datum Ground Level Elevation 5050'
Log Measured From Kelly Bushing 21 FT
Drilling Measured From Kelly Bushing

Other Services
GR/JB
RBP
RBL 0 PSI
Elevation
K.B. 5071'
D.F. ---
G.L. 5050'

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Date	03-JUL-2018									
Run Number	Four									
Depth Driller	12611 FT									
Depth Logger	6699 FT									
Bottom Logged Interval	6685 FT									
Top Log Interval	Surface									
Open Hole Size	7.875"									
Type Fluid	Water									
Density / Viscosity	8.34 lb/gal									
Max. Recorded Temp.	219°F									
Estimated Cement Top	See Log									
Time Well Ready	ROA									
Time Logger on Bottom	---									
Equipment Number	HD-0325									
Location	Platteville, CO									
Recorded By	R. Cameron									
Witnessed By	Justin McMillen									
Borehole Record					Tubing Record					
Run Number	Bit	From	To	Size	Weight	From	To			
Casing Record	Size (in)	Wgt (lbs/ft)	Grade	Top	Bottom					
Surface Casing	9 5/8	36	J-55	Surface	1870 FT					
Intermediate #1	5 1/2	17	HCP-110	Surface	12601 FT					
Intermediate #2										
Liner										

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All interpretations are opinions based on inferences from electrical or other measurements and we cannot and do not guarantee the accuracy or correctness of any interpretation, and we shall not, except in the case of gross or willful negligence on our part, be liable or responsible for any loss, costs, damages, or expenses incurred or sustained by anyone resulting from any interpretation made by any of our officers, agents or employees. These interpretations are also subject to our general terms and conditions set out in our current Price Schedule.

Comments

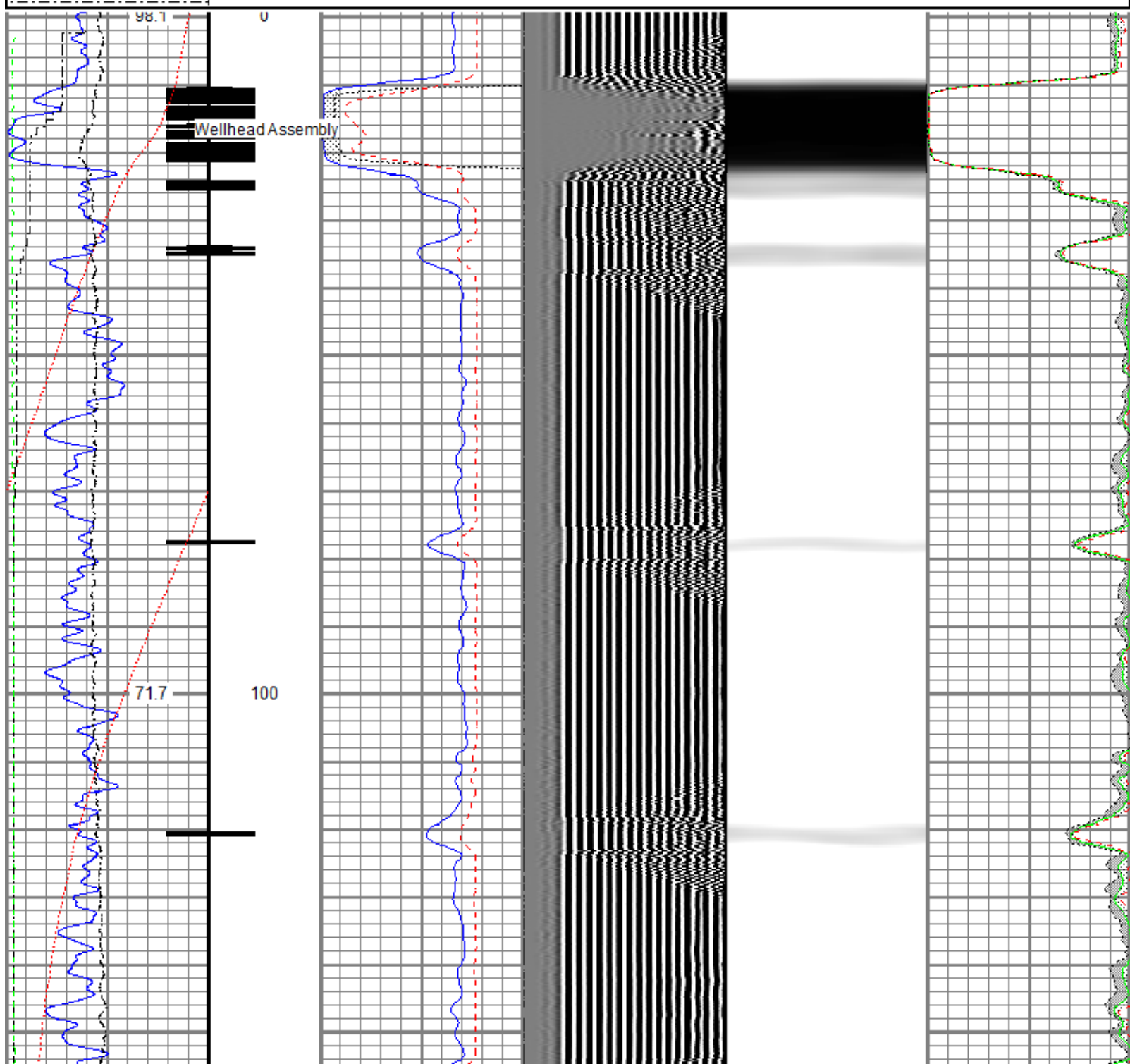
Log ran as per customer request
Depth referenced to Kelly Bushing at 21 FT
Adjusted 0 FT to correlate with Kelly Bushing
Gauge Ring/Junk Basket ran to 7691 FT with no debris
5.50" RBP Set @ 6712 FT
Log ran from 6685 FT to surface
Recorded with 2800 PSI Surface Induced Pressure
Logging tools were clean and free of debris upon completion of operations
Thank you for choosing Reliance Oilfield Services, LLC!!

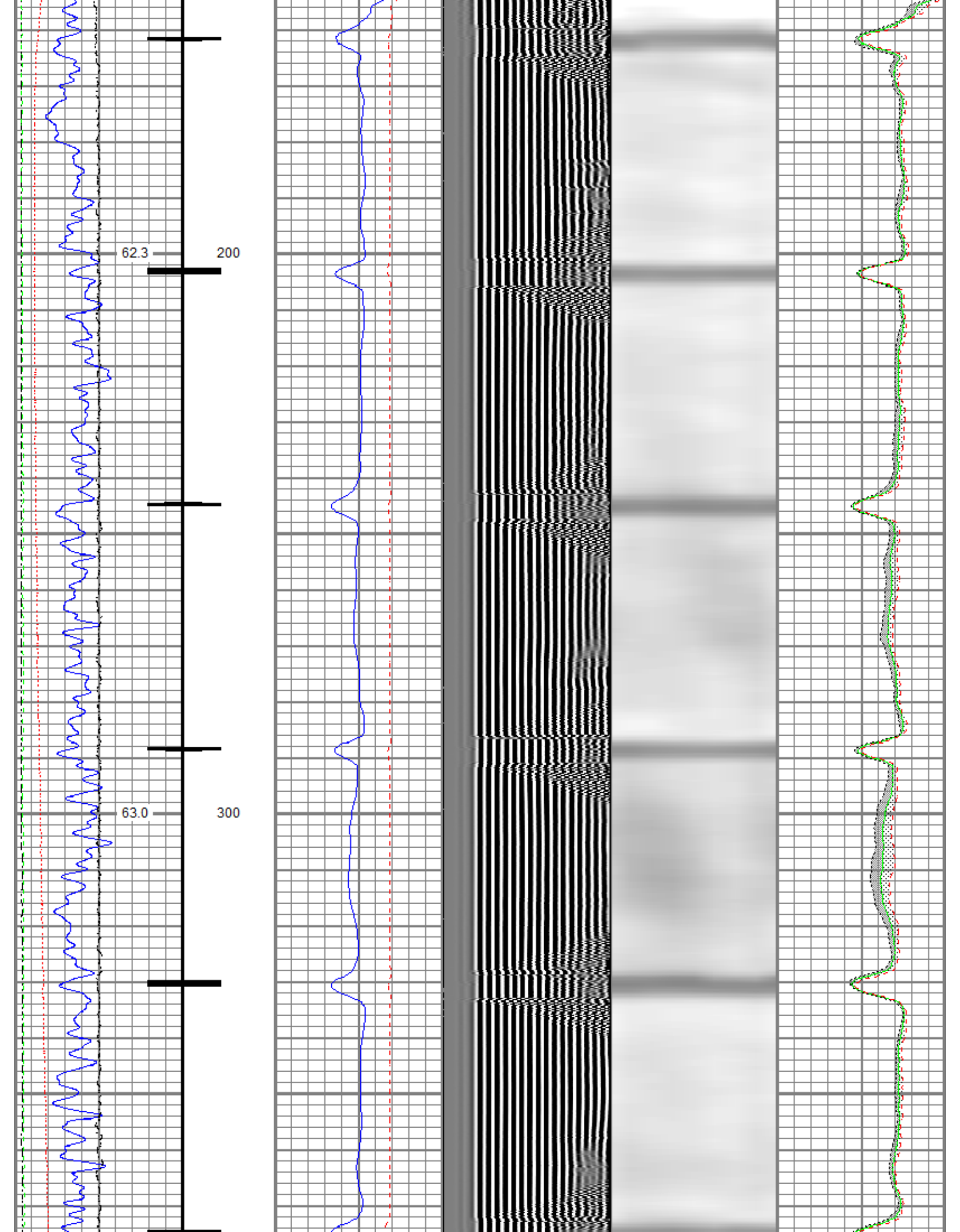
Main Pass

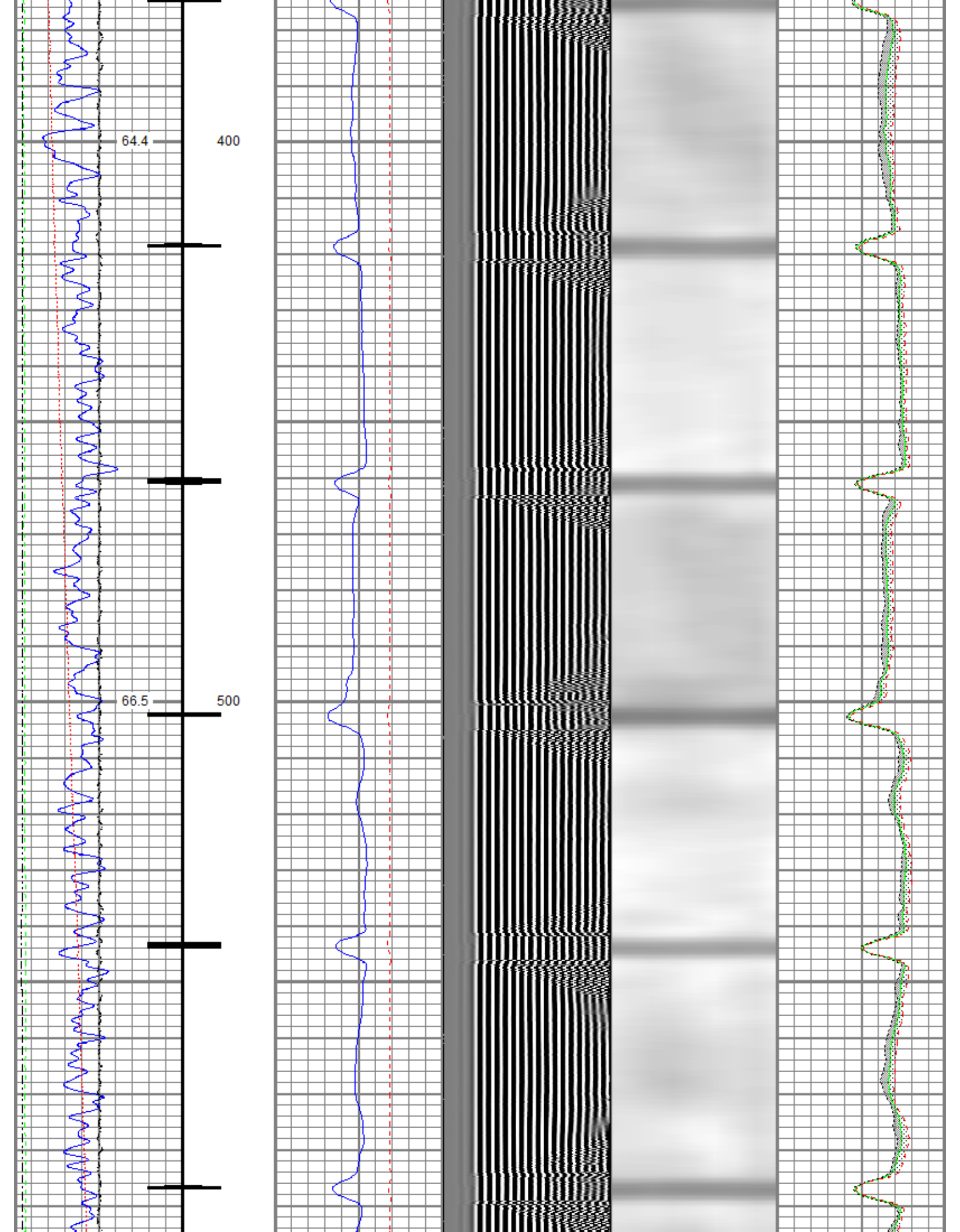


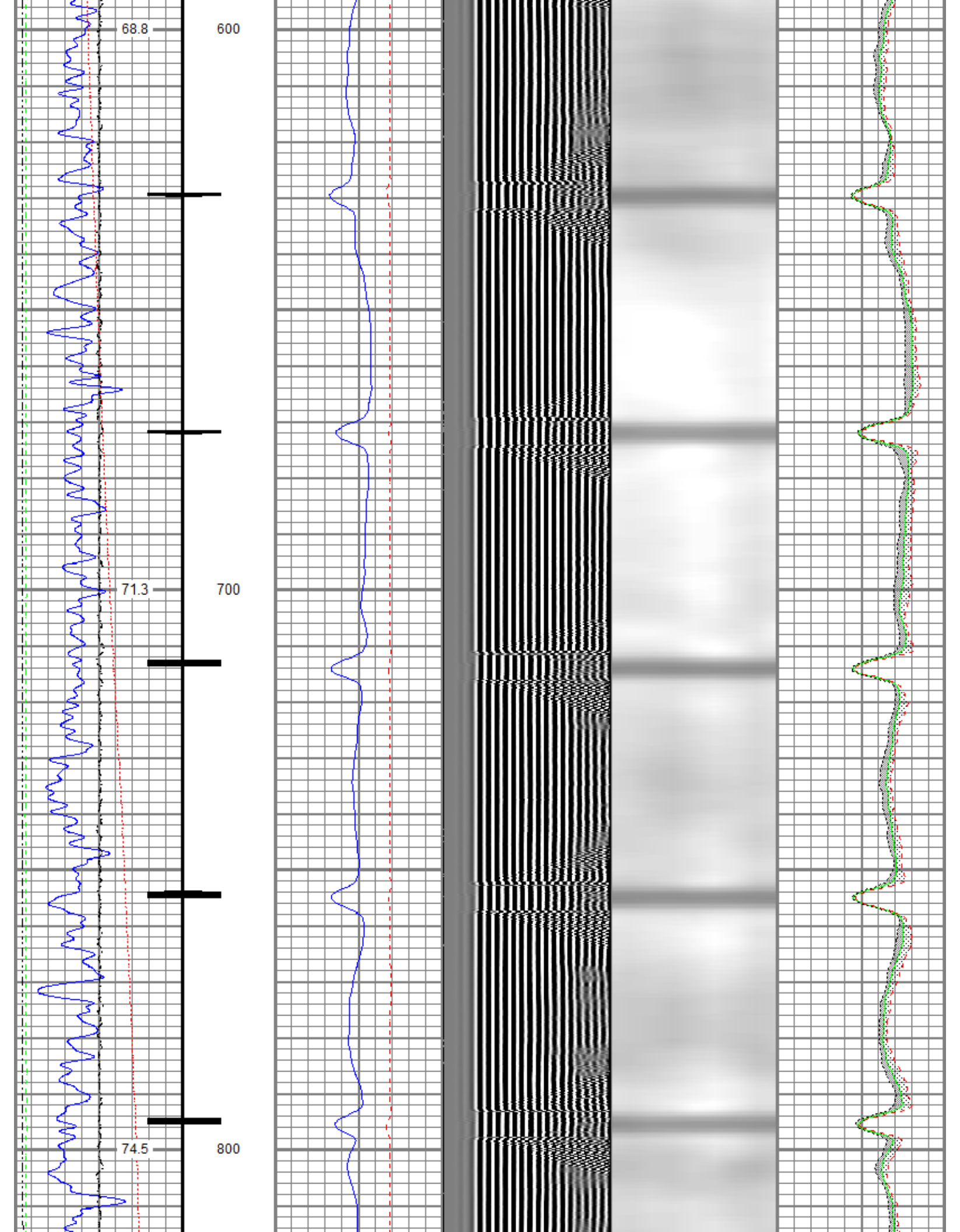
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 Dataset Pathname pass4
 Presentation Format ros_radrii
 Dataset Creation Tue Jul 03 14:40:59 2018
 Charted by Depth in Feet scaled 1:240

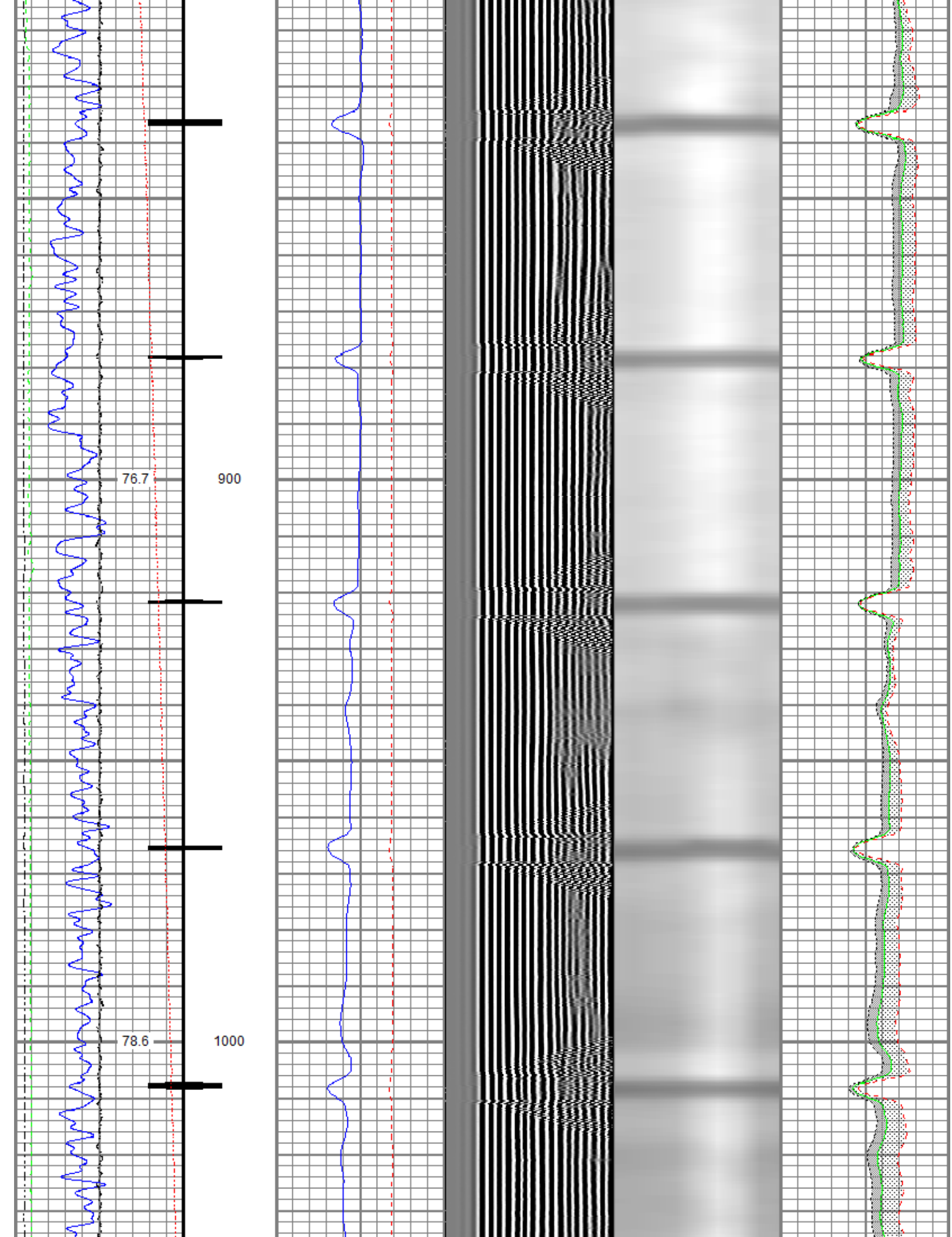
Gamma Ray	0	3' Amplitude (mV) 100	5' Variable Density Log	Sector Map	0	Average Amplitude 100
(GAPI) 120		3' Amplitude x 5	200			Minimum Amplitude
Casing Collar Locator	0	(mV) 20			0	100
Temperature (degF) 20		3' Travel Time				Maximum Amplitude
Line Speed	650	(u sec) 150			0	100
(ft/min) 150						
Line Tension (lb) 2000						
Differential Temperature						
(degF) 2						

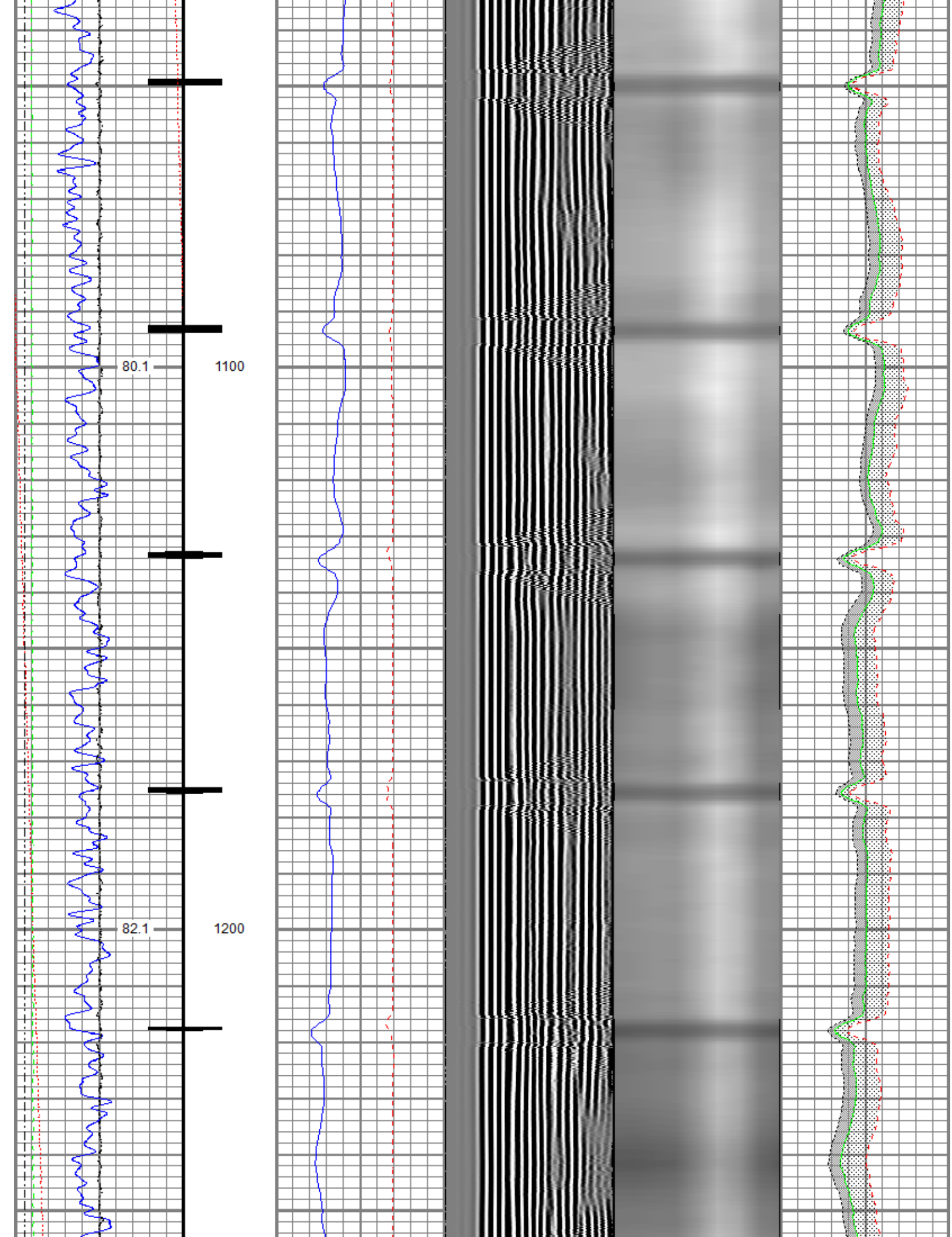


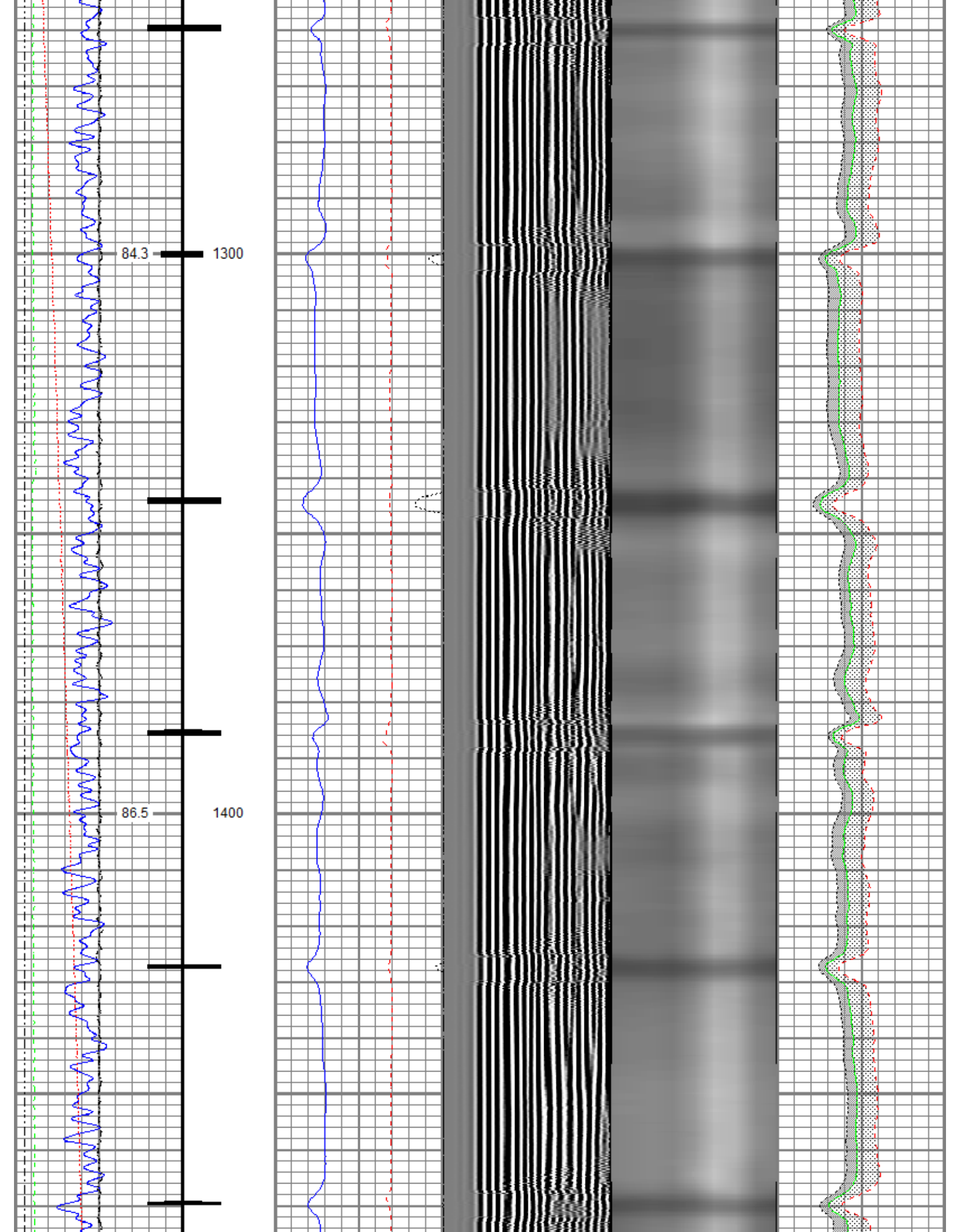


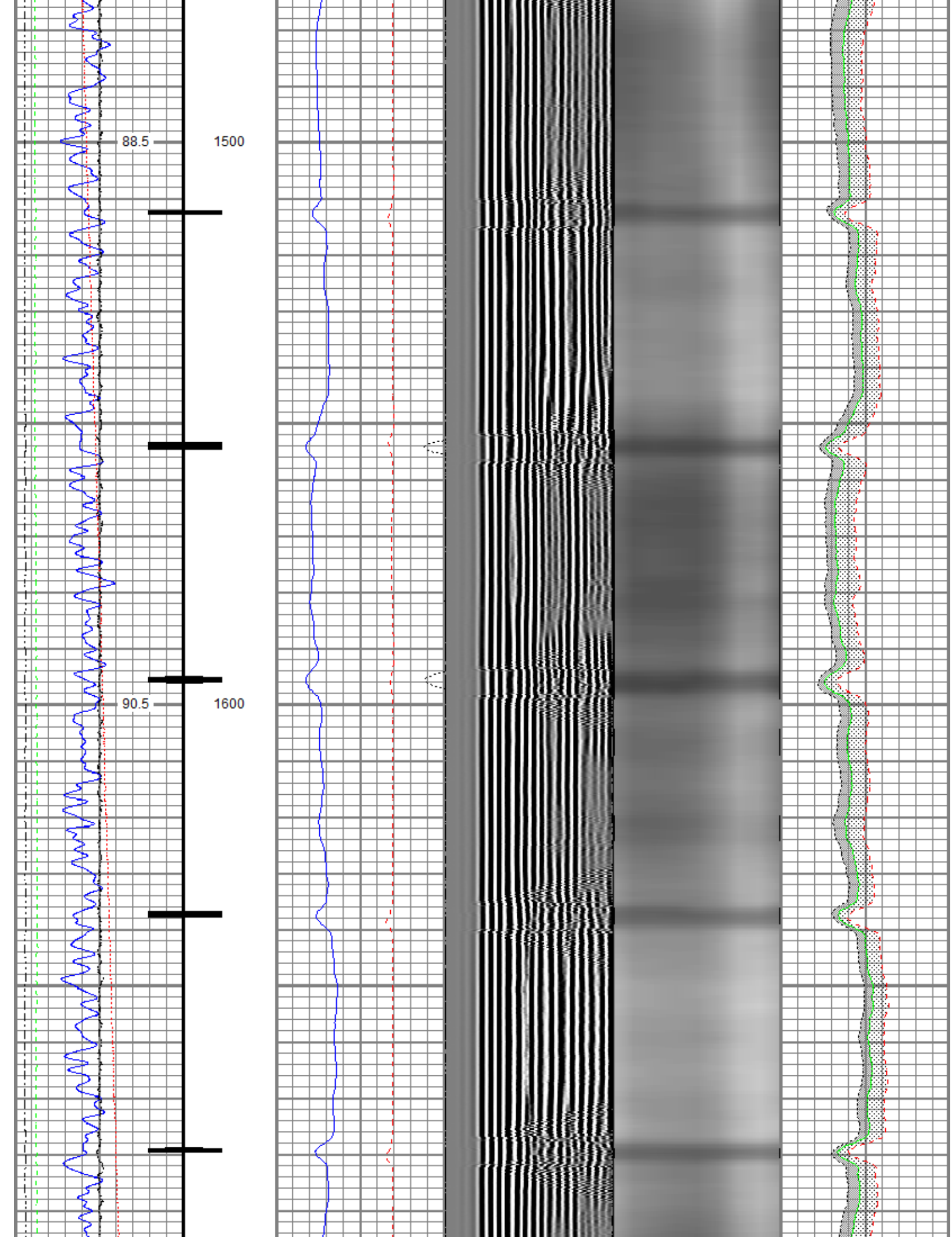


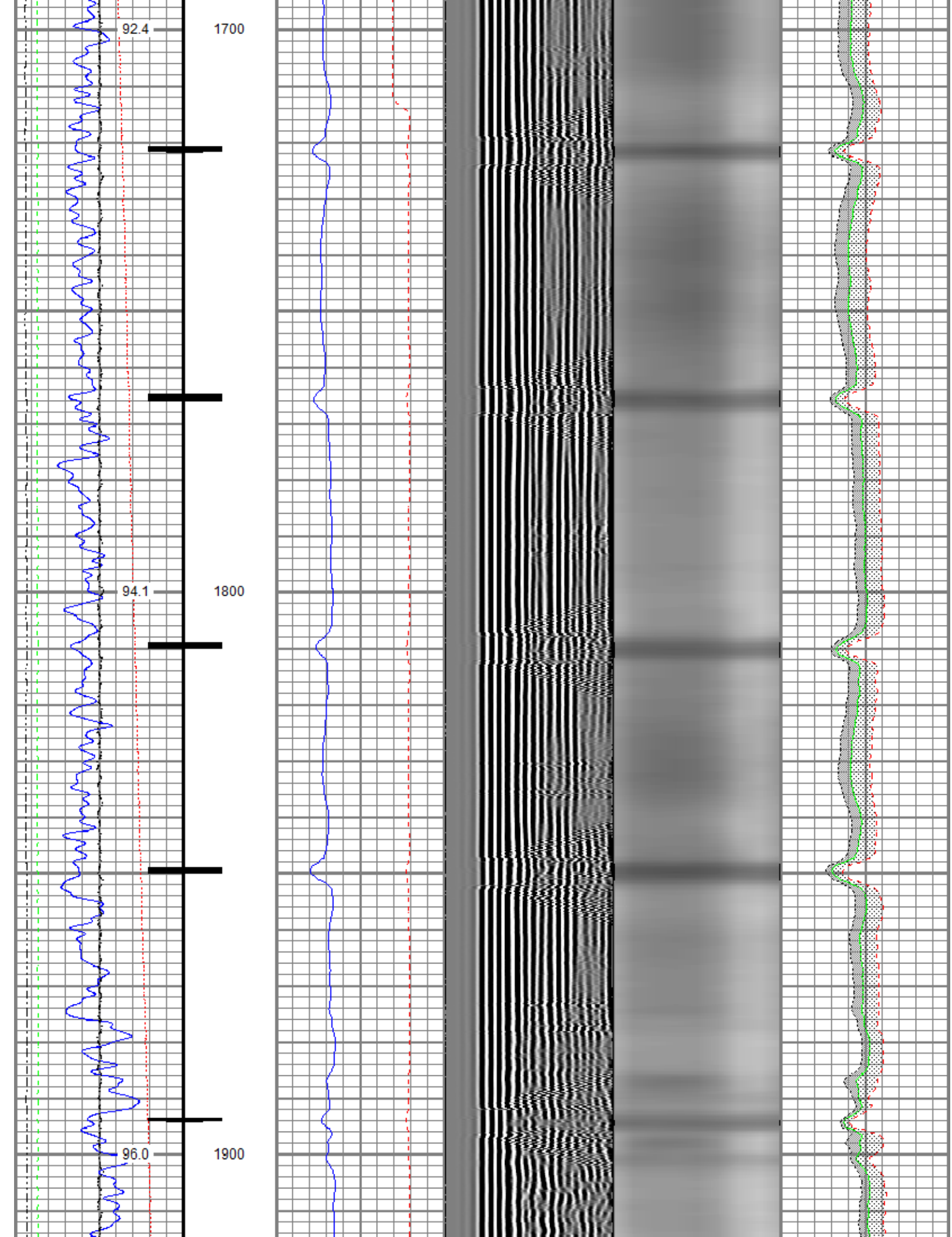


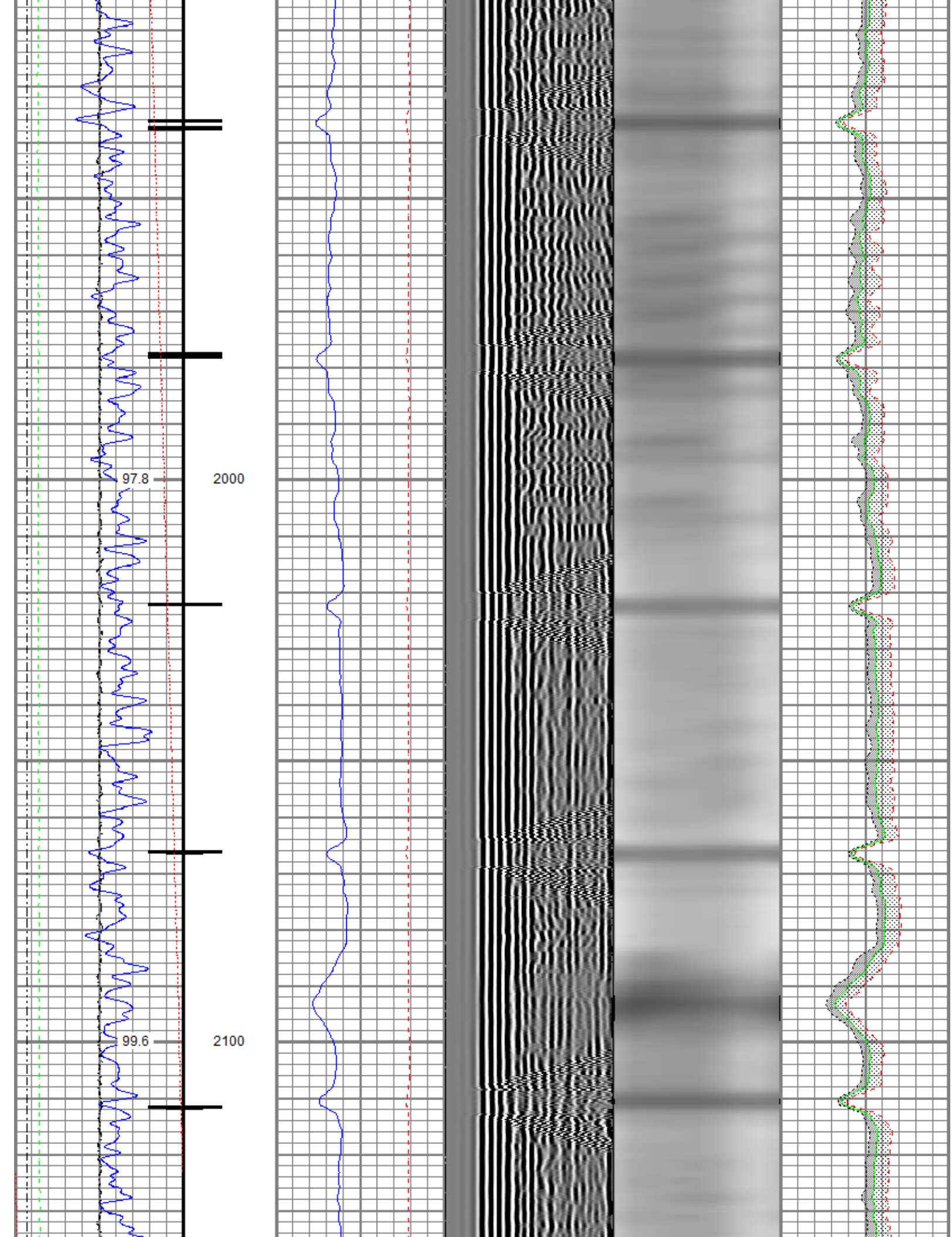


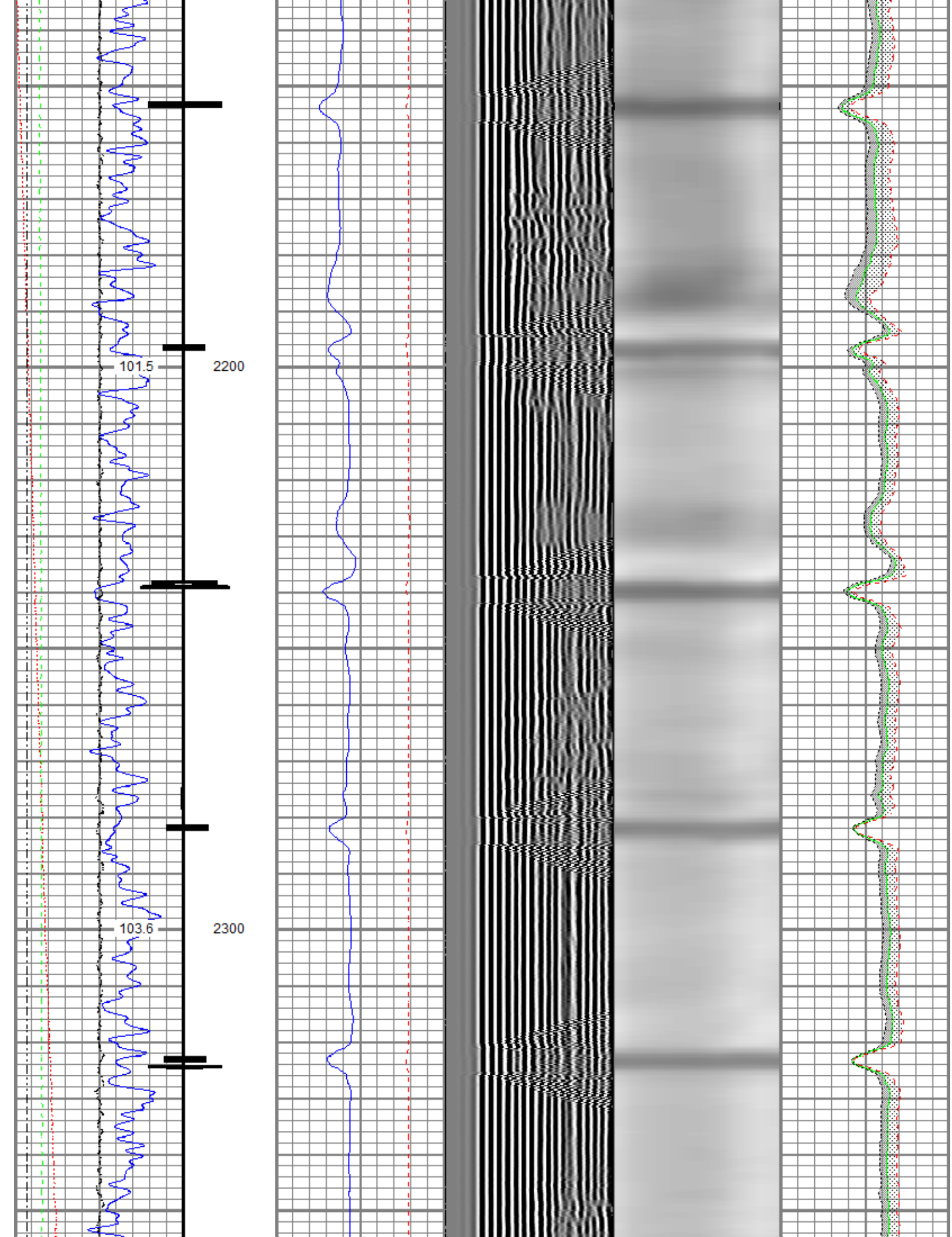


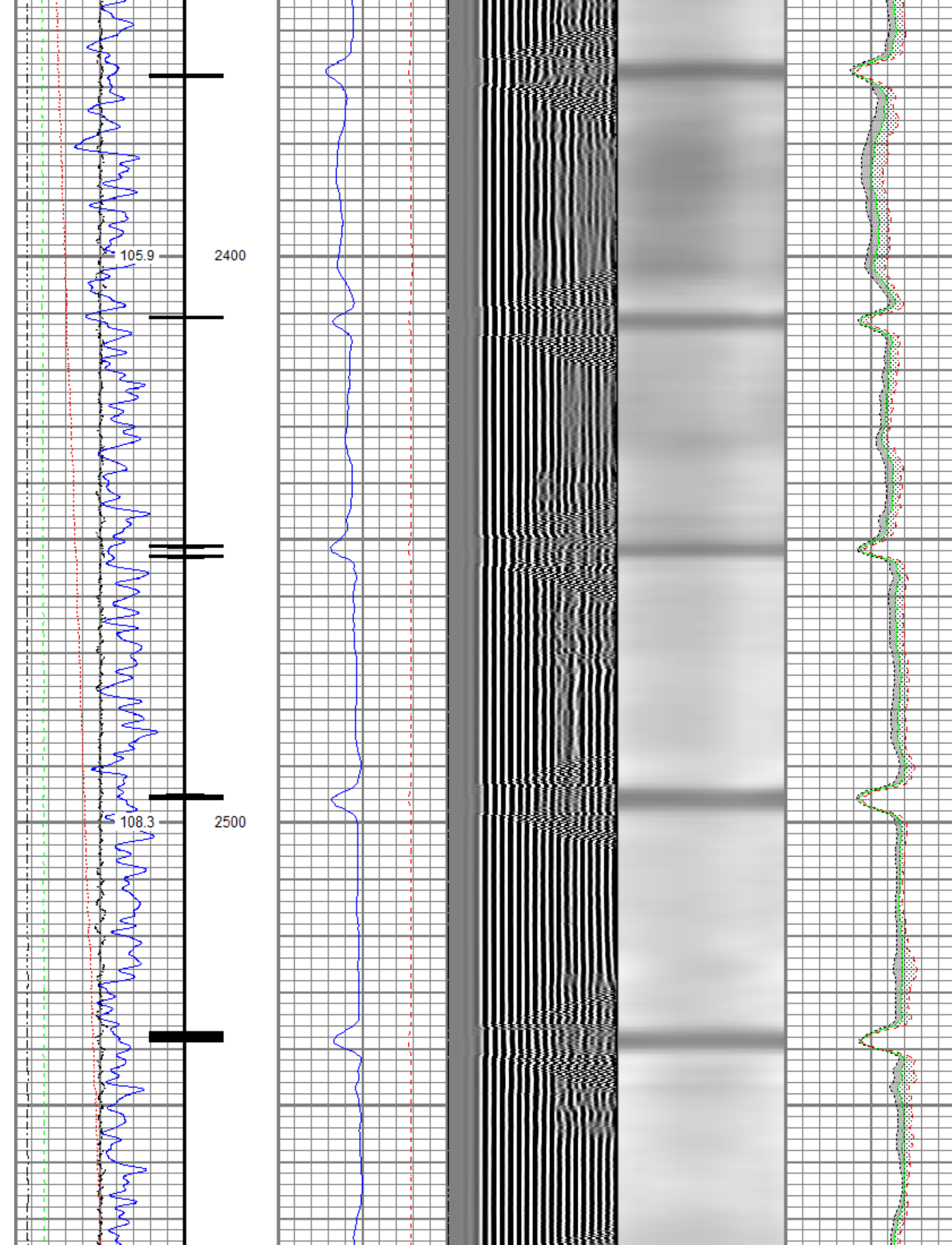


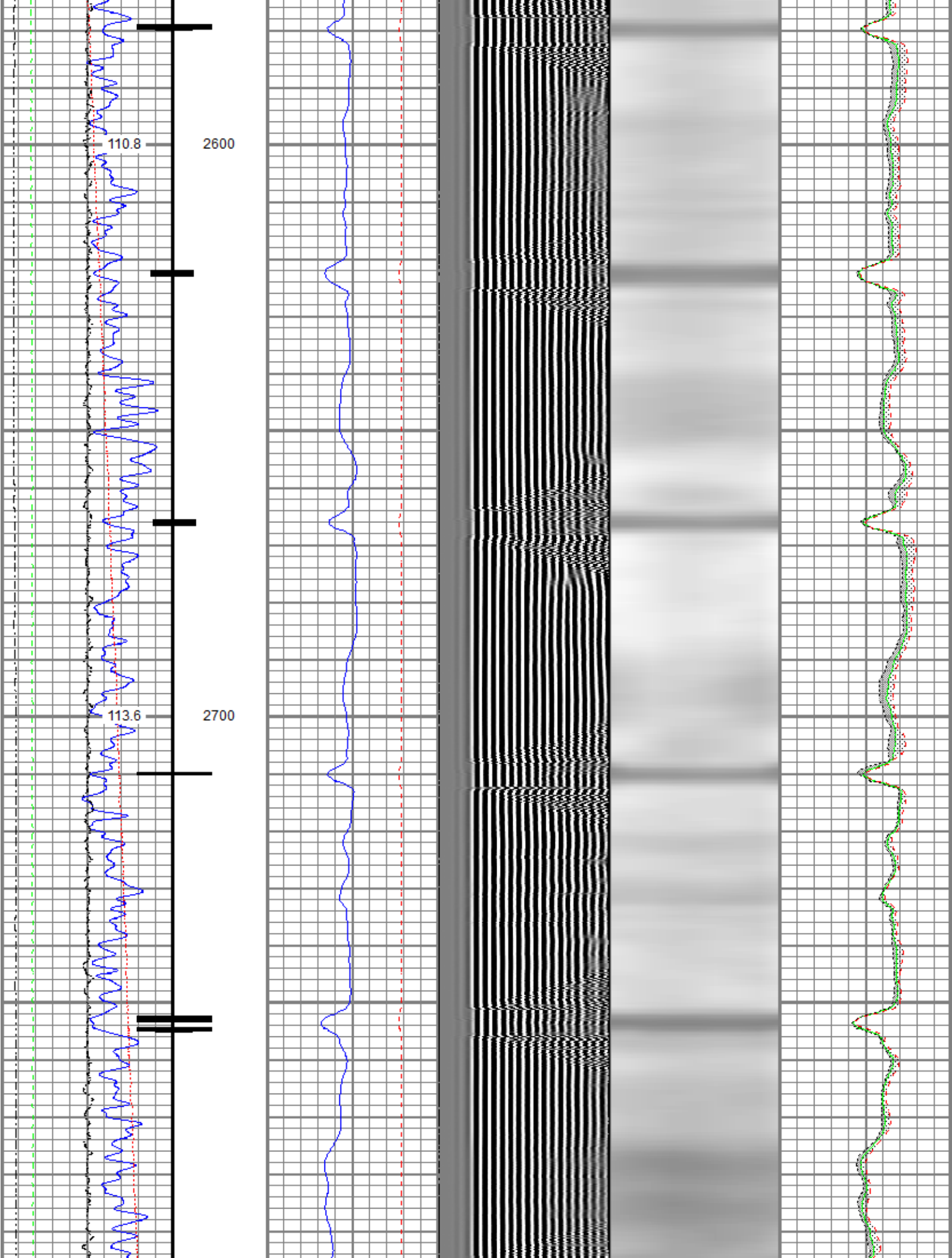


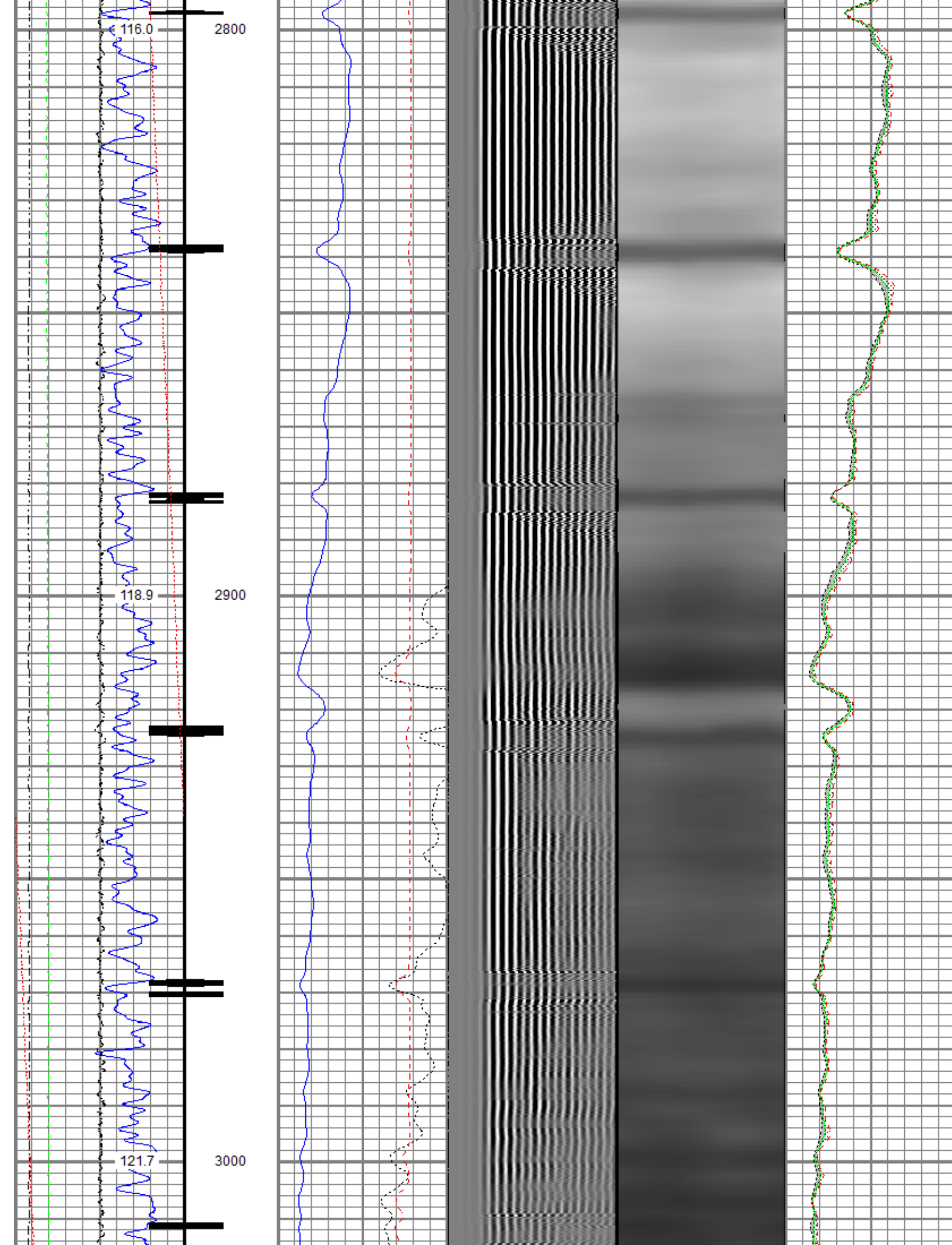


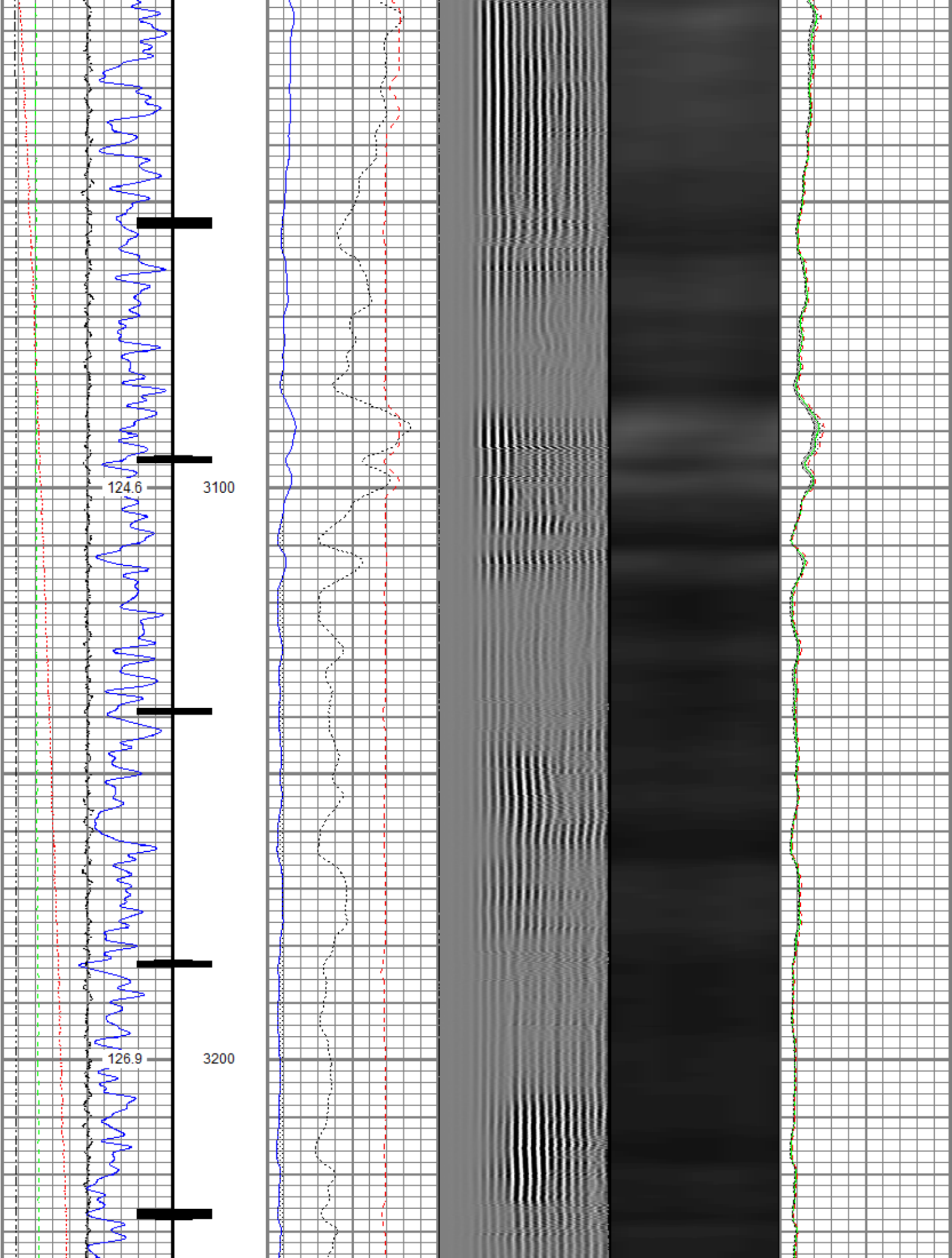


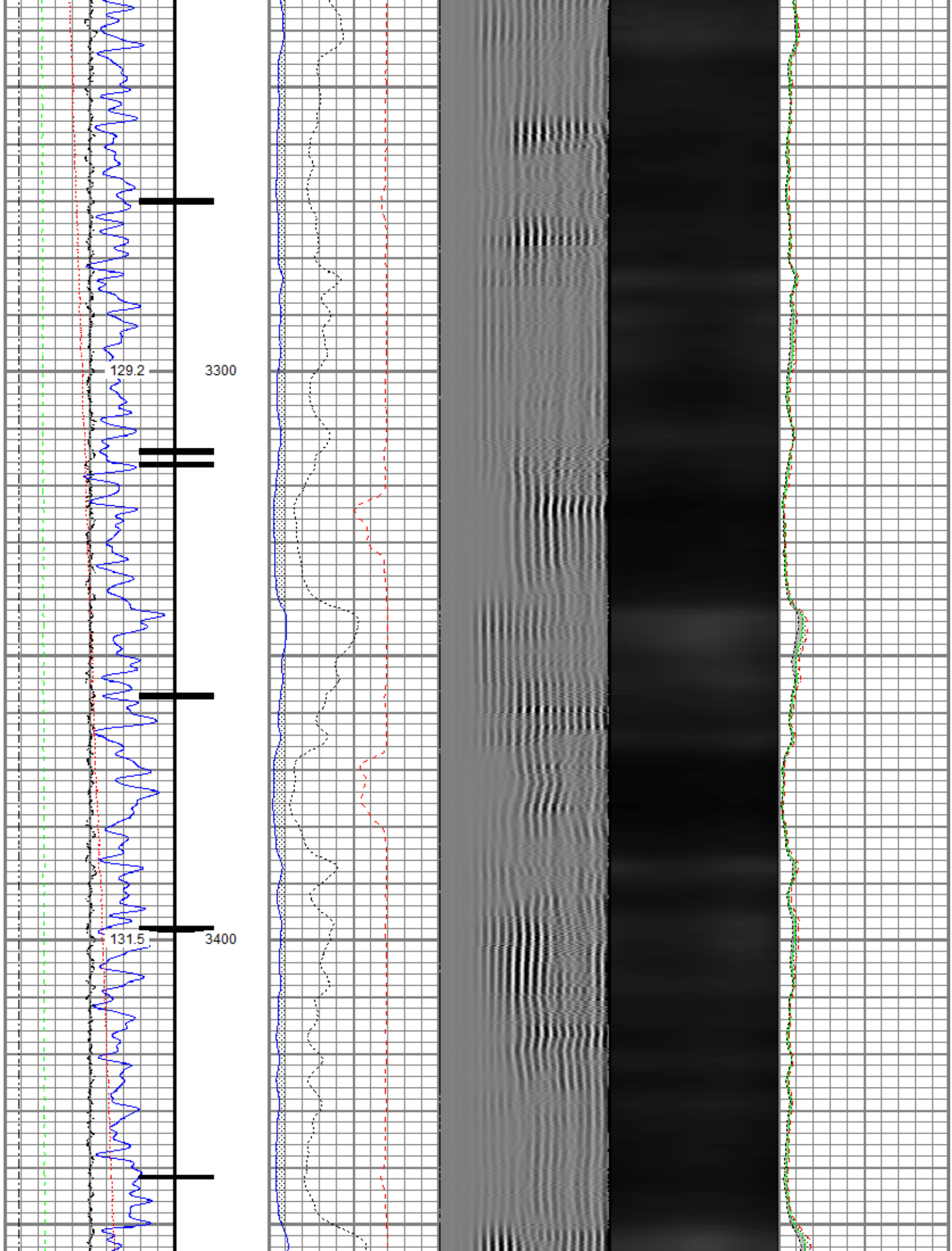


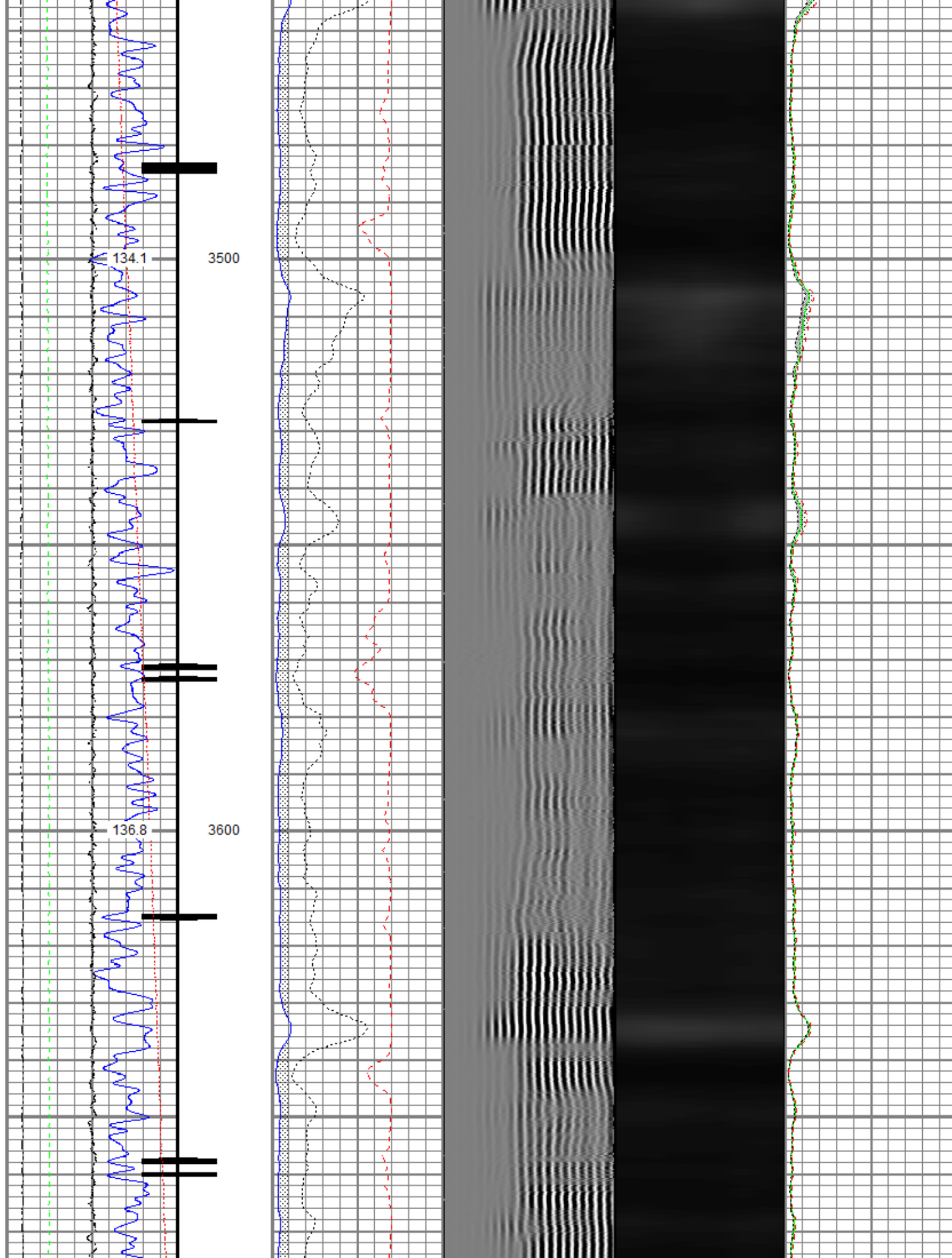


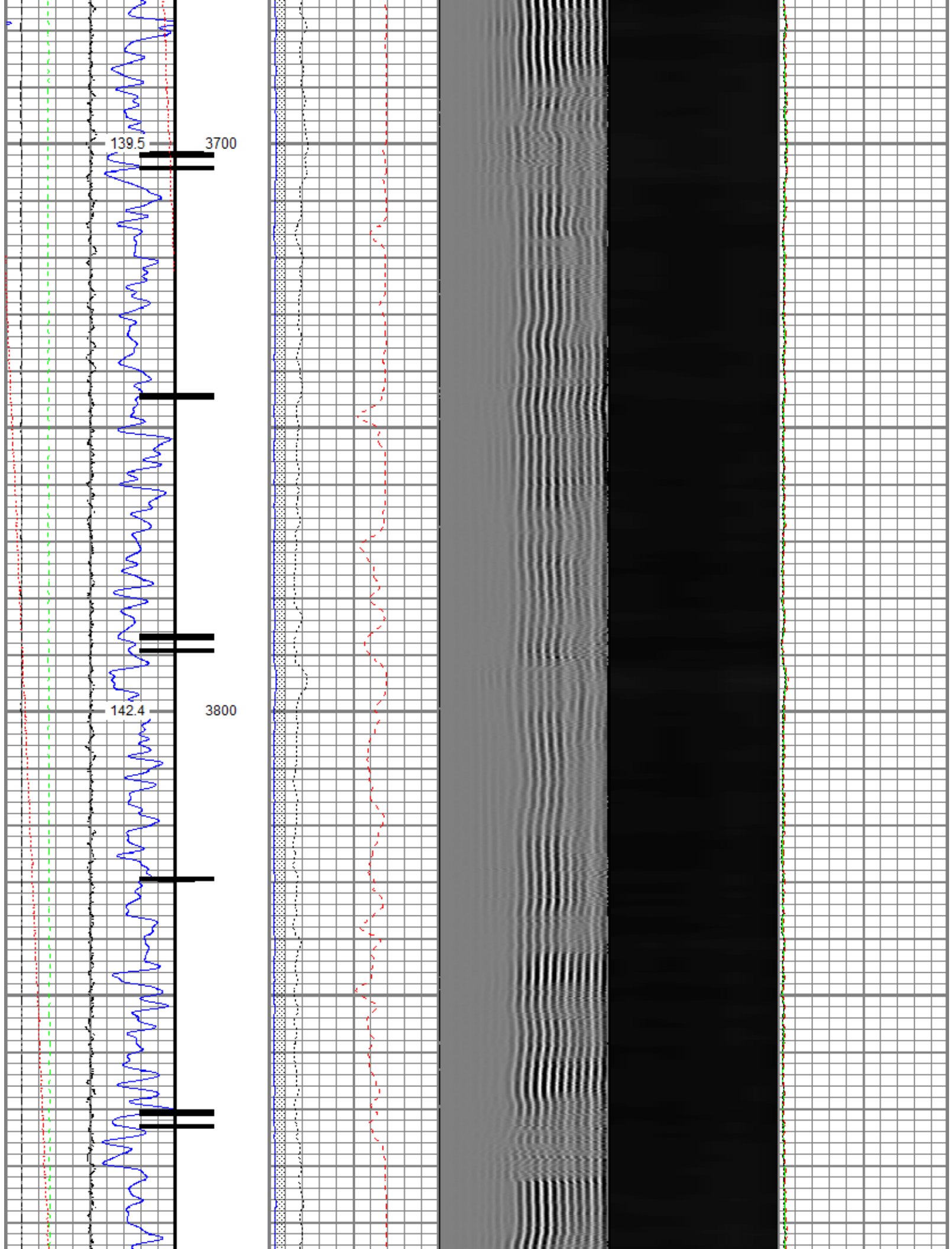


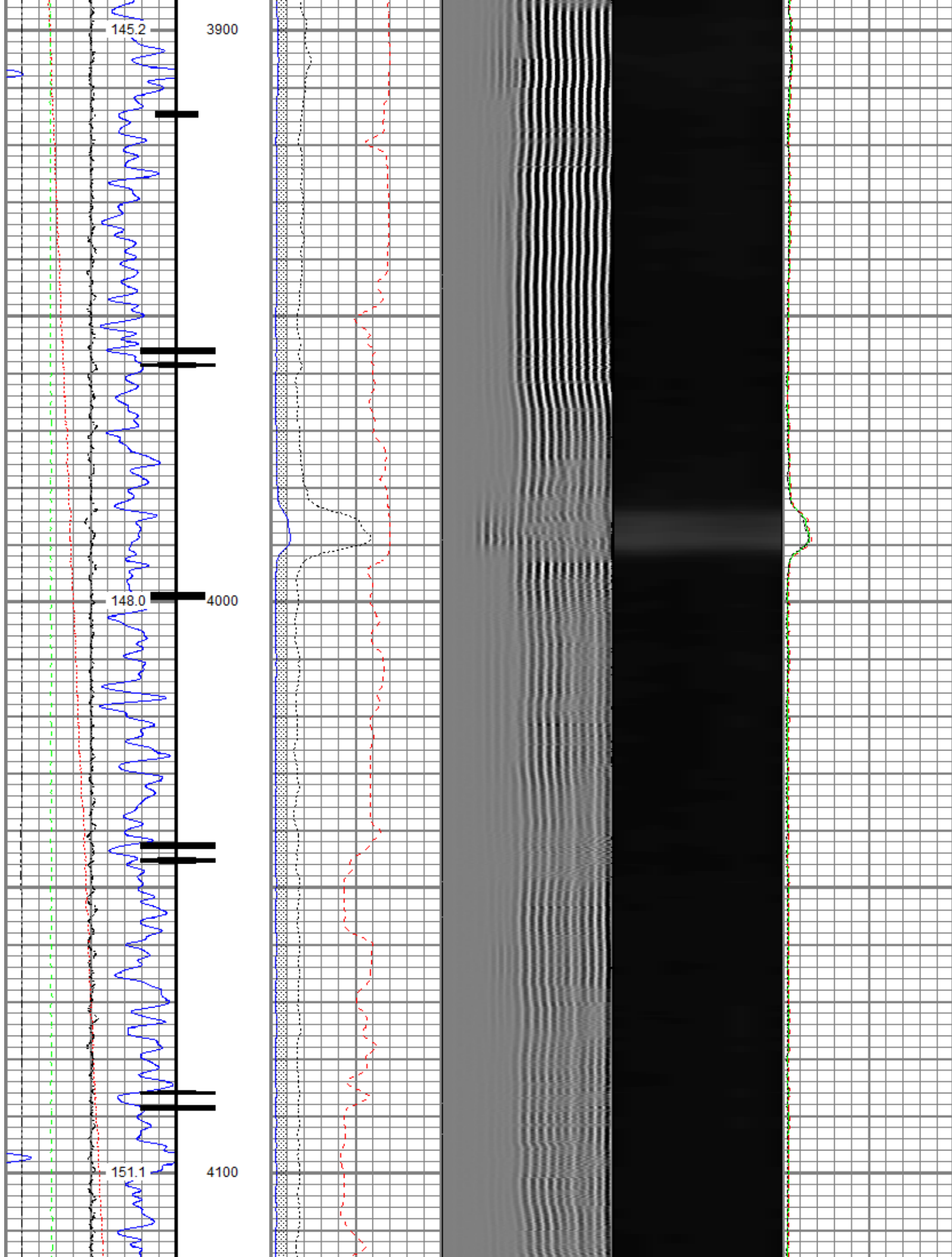


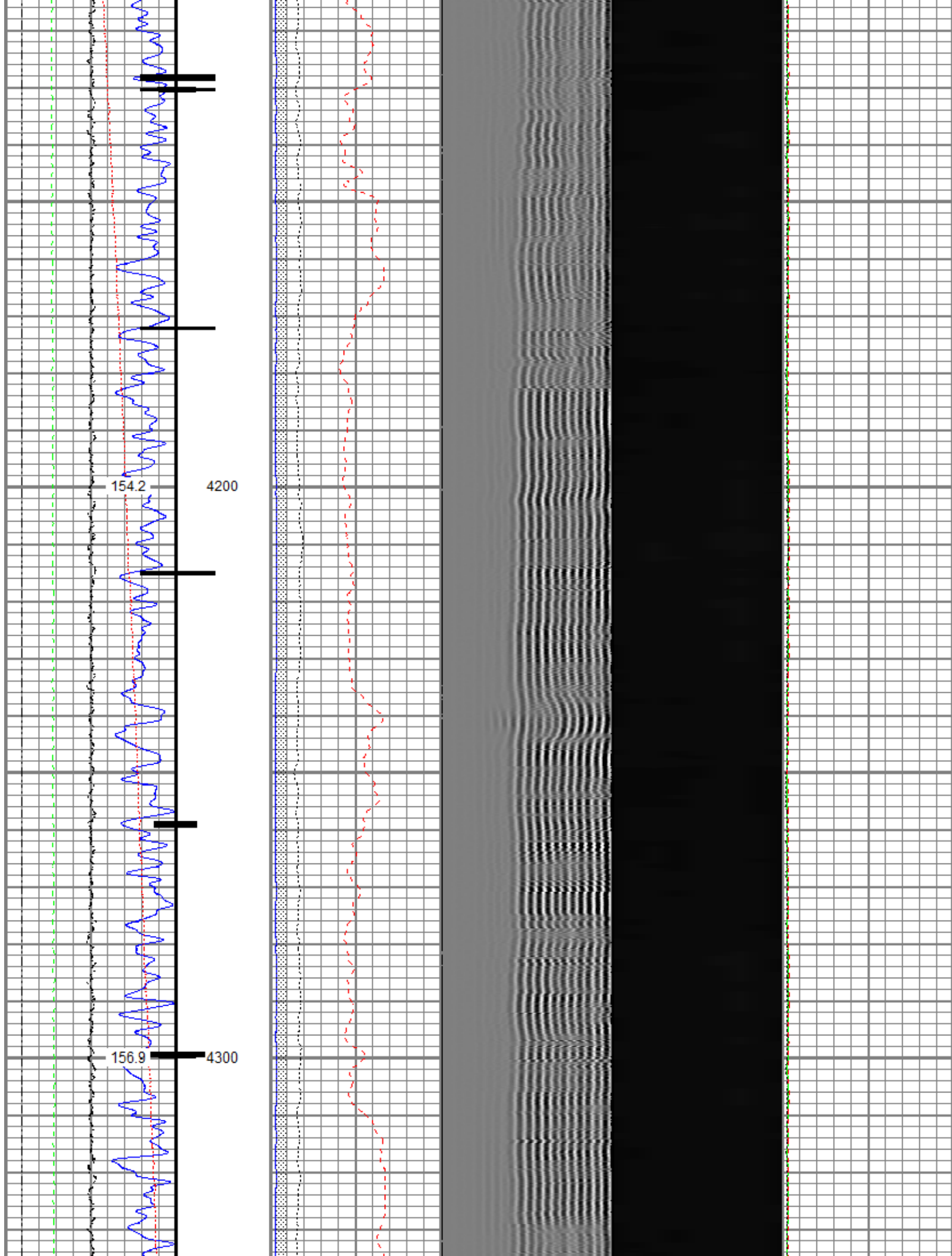


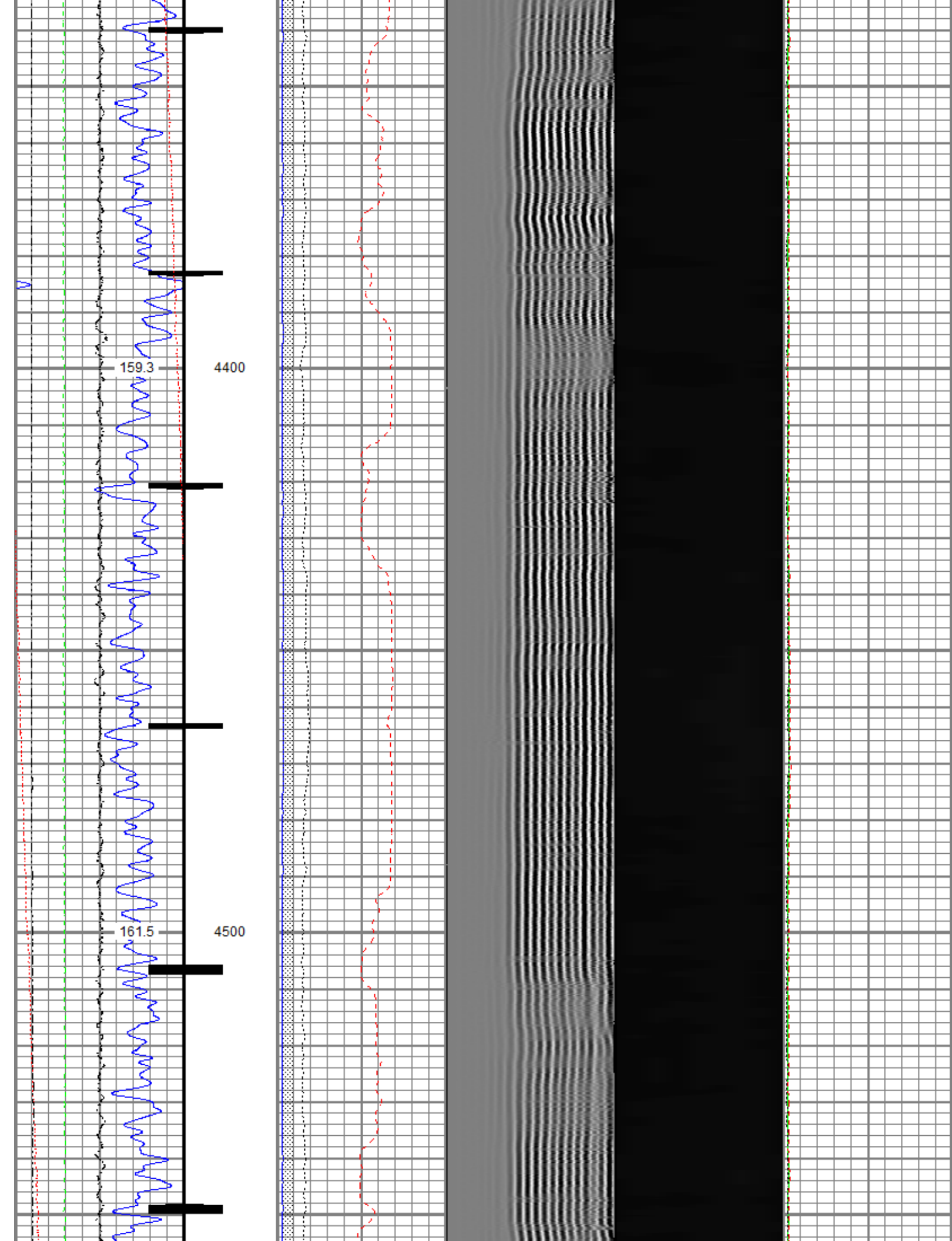


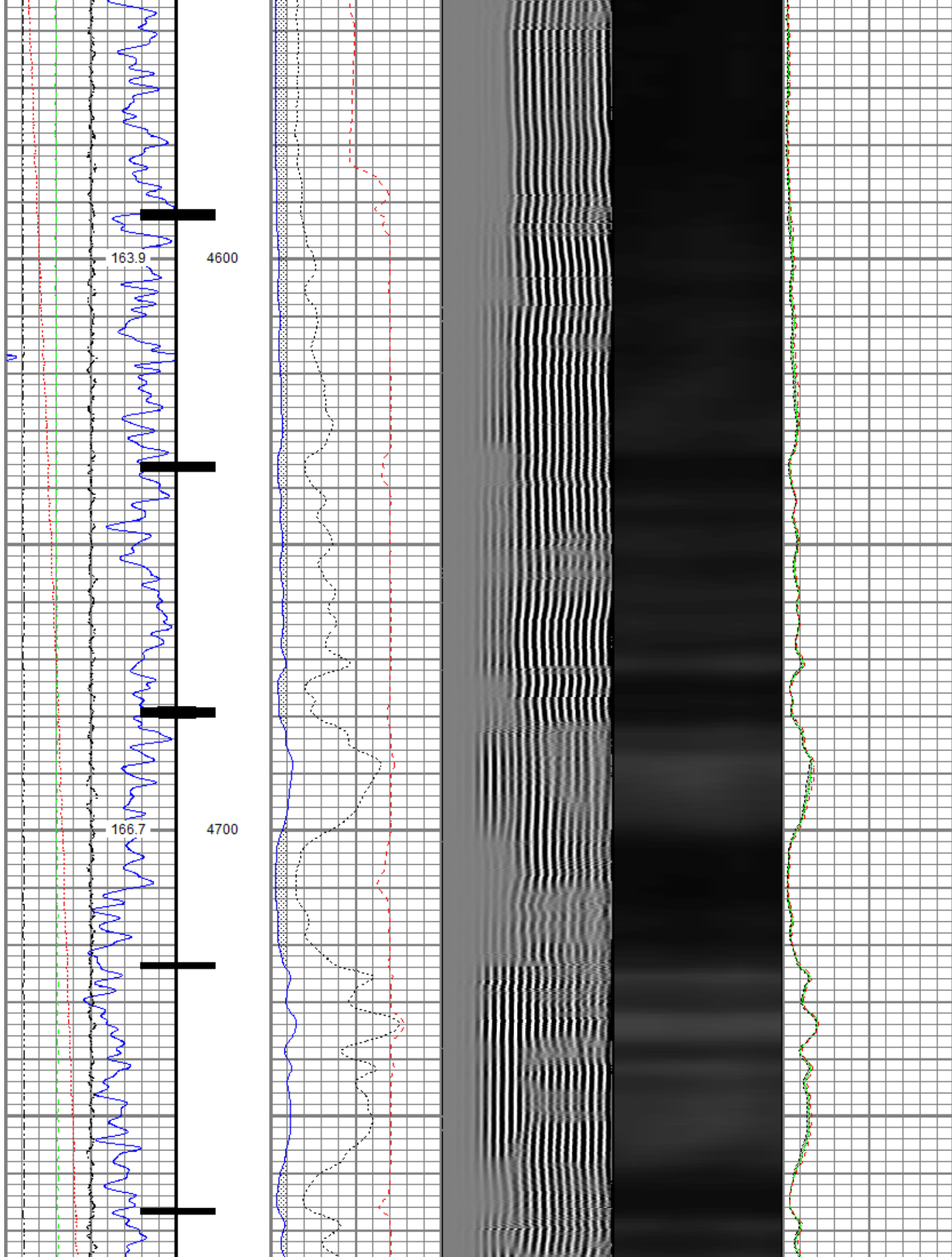


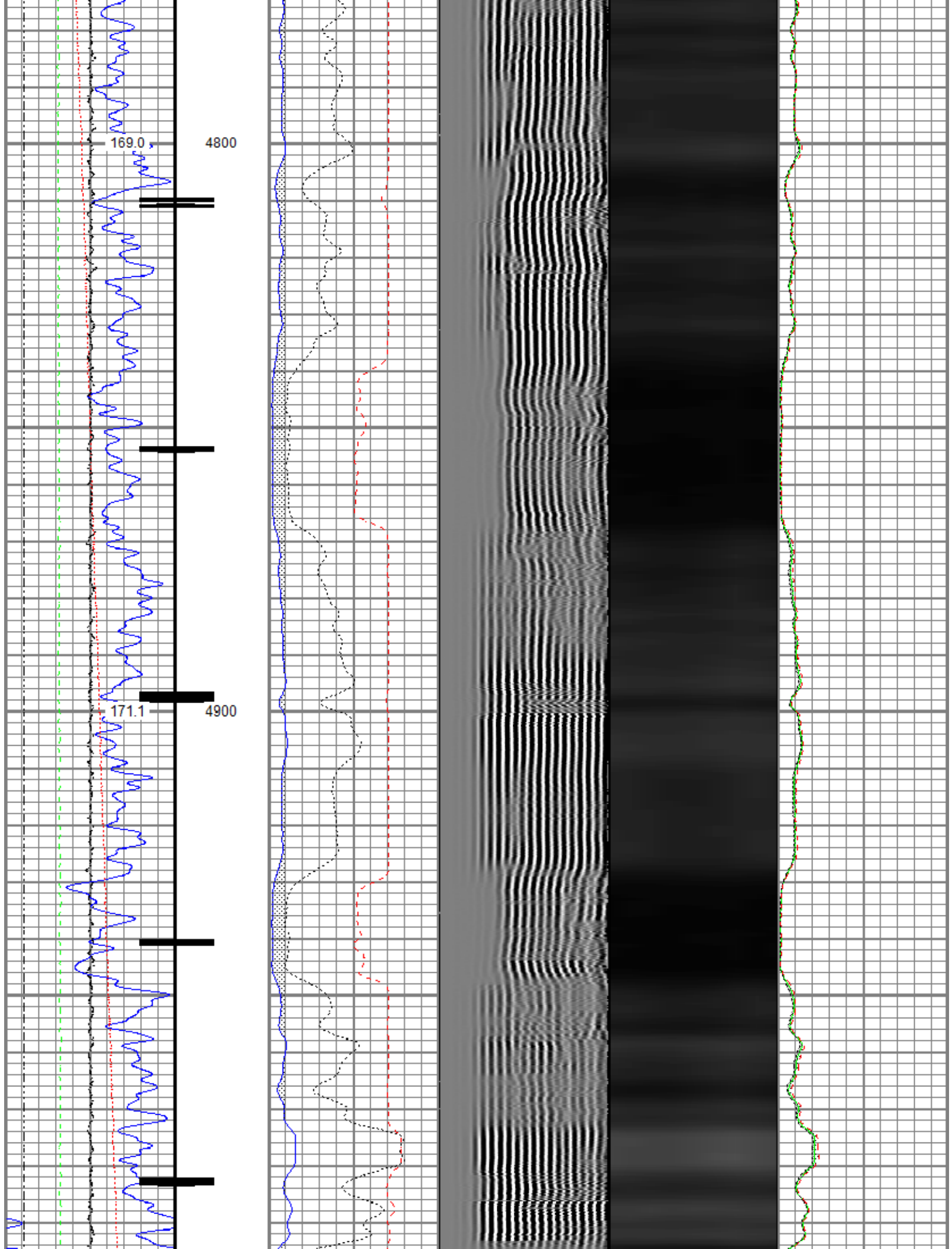


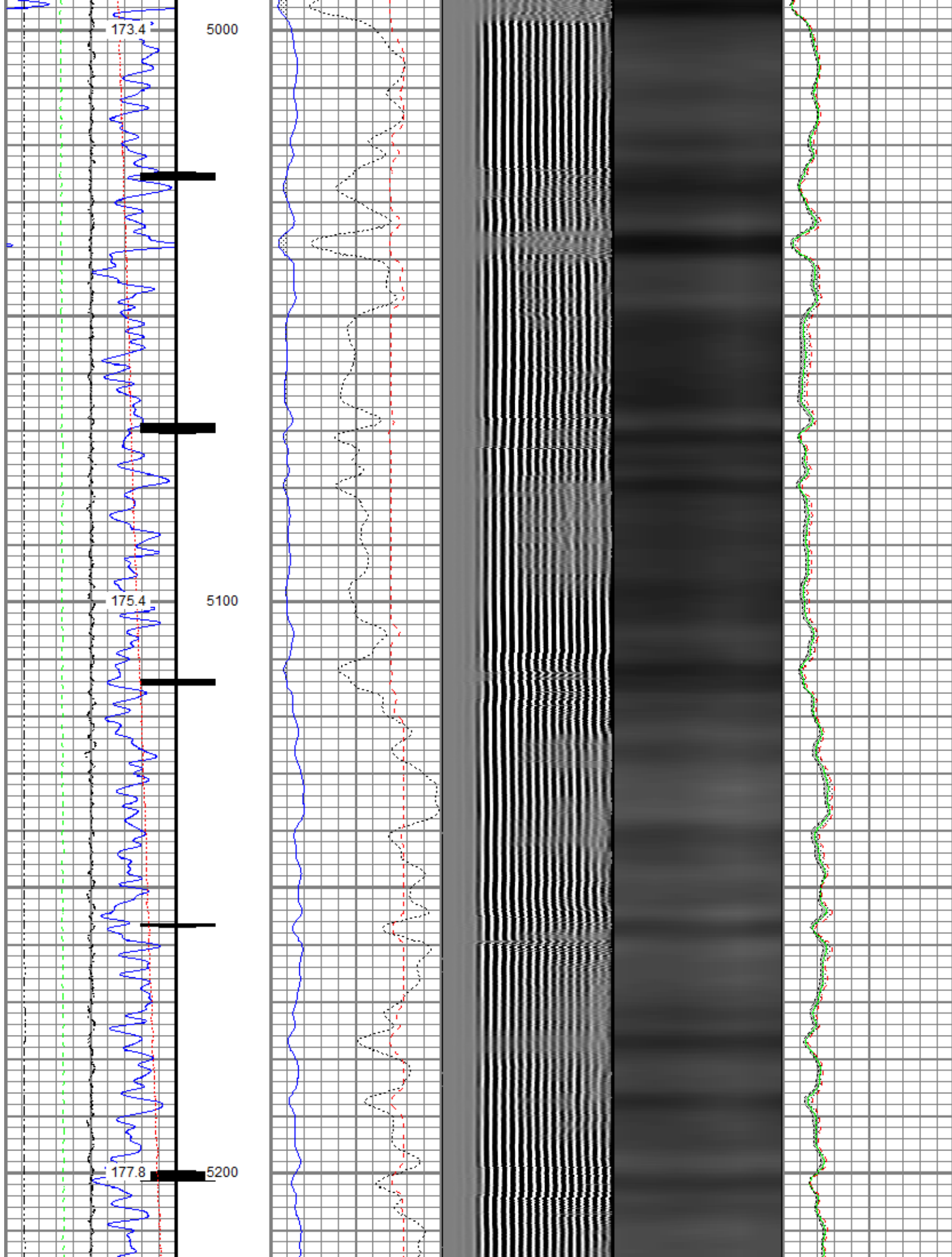


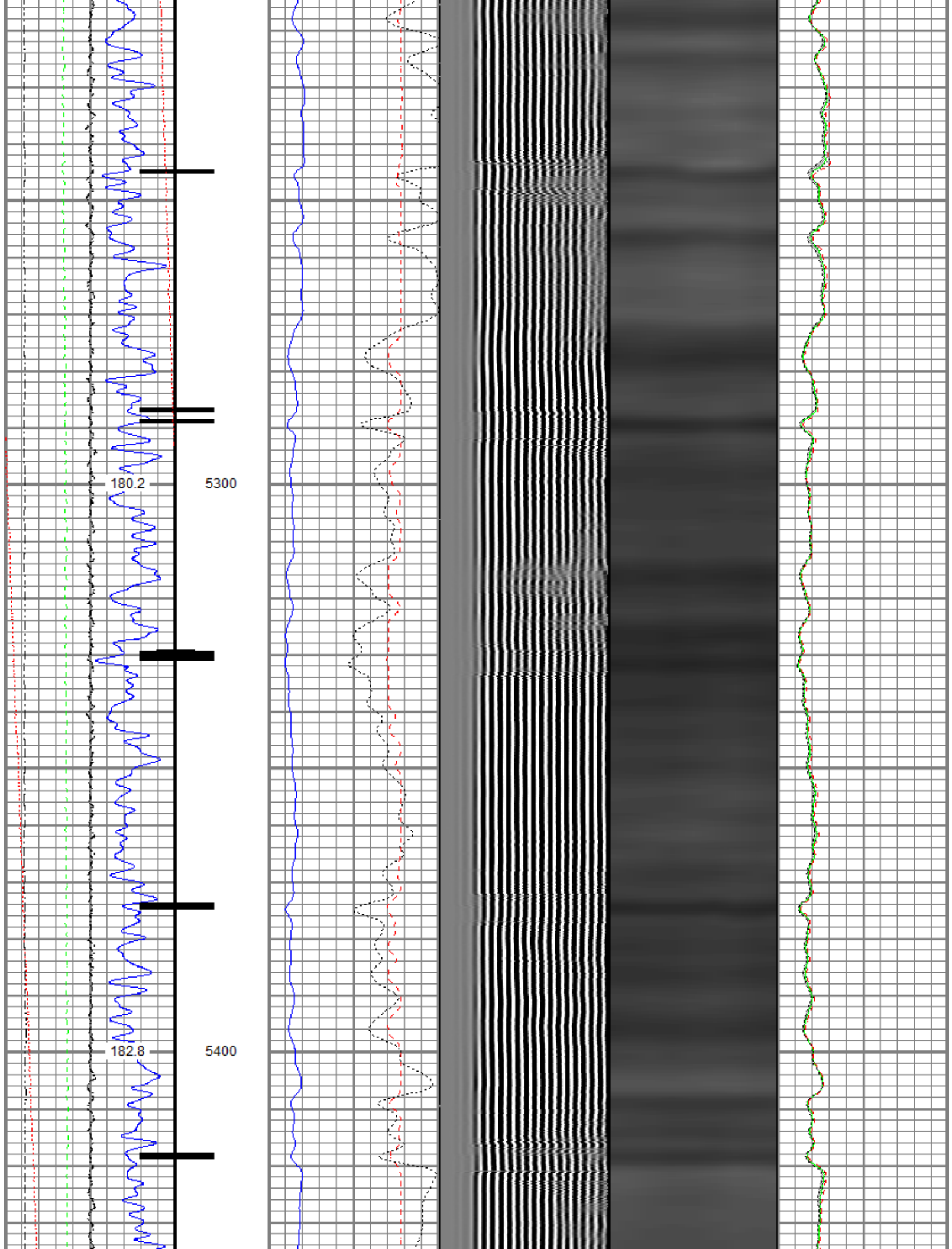


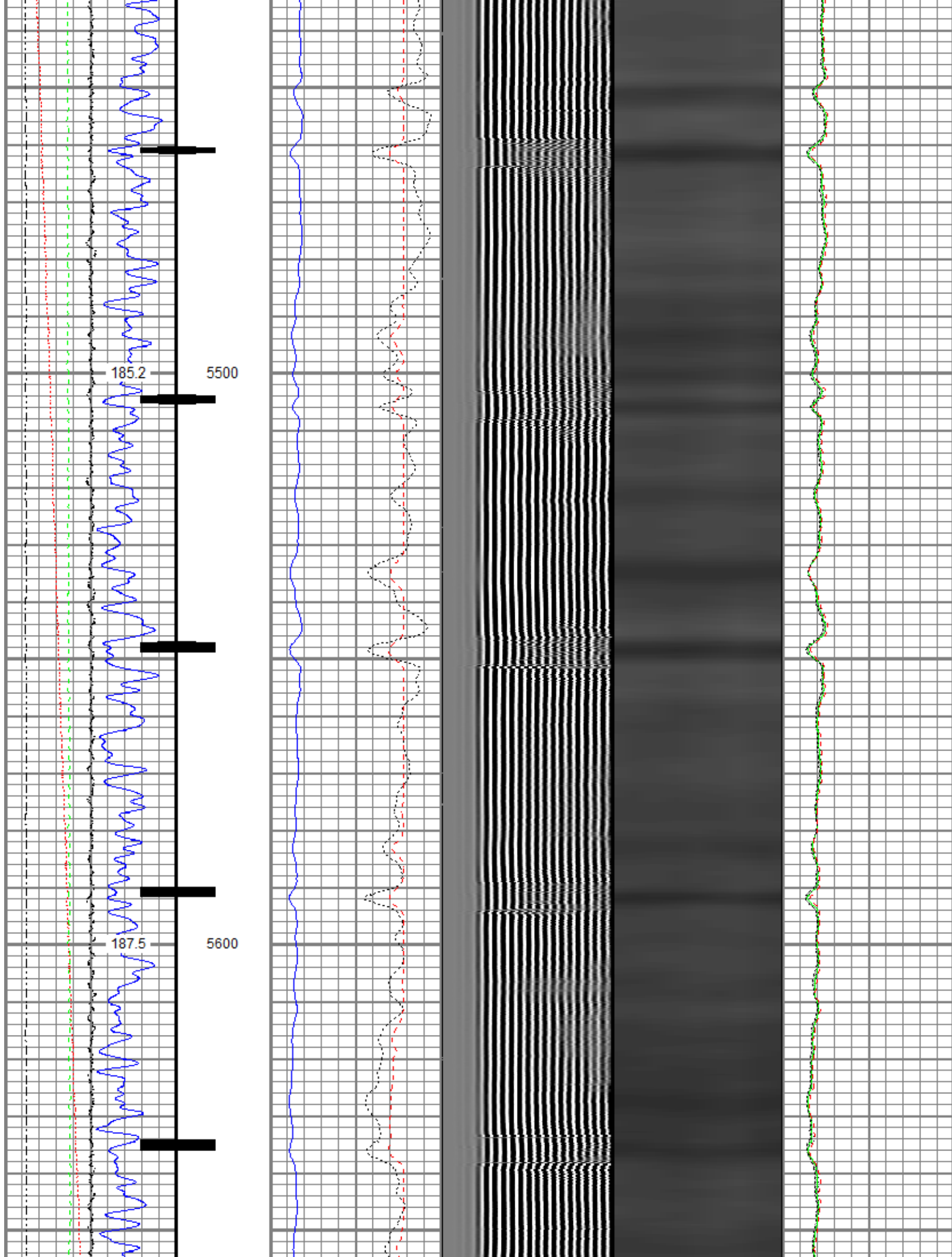


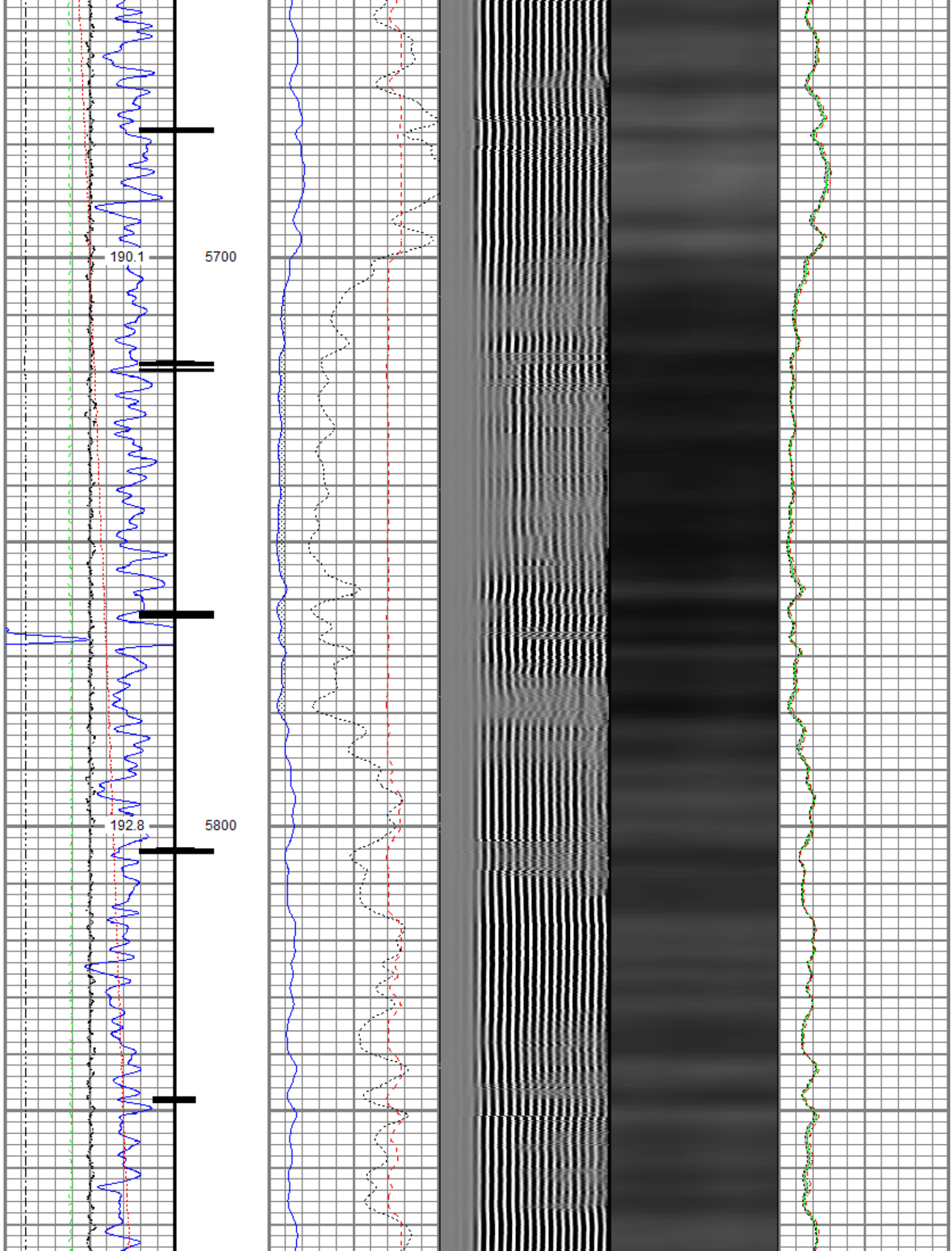


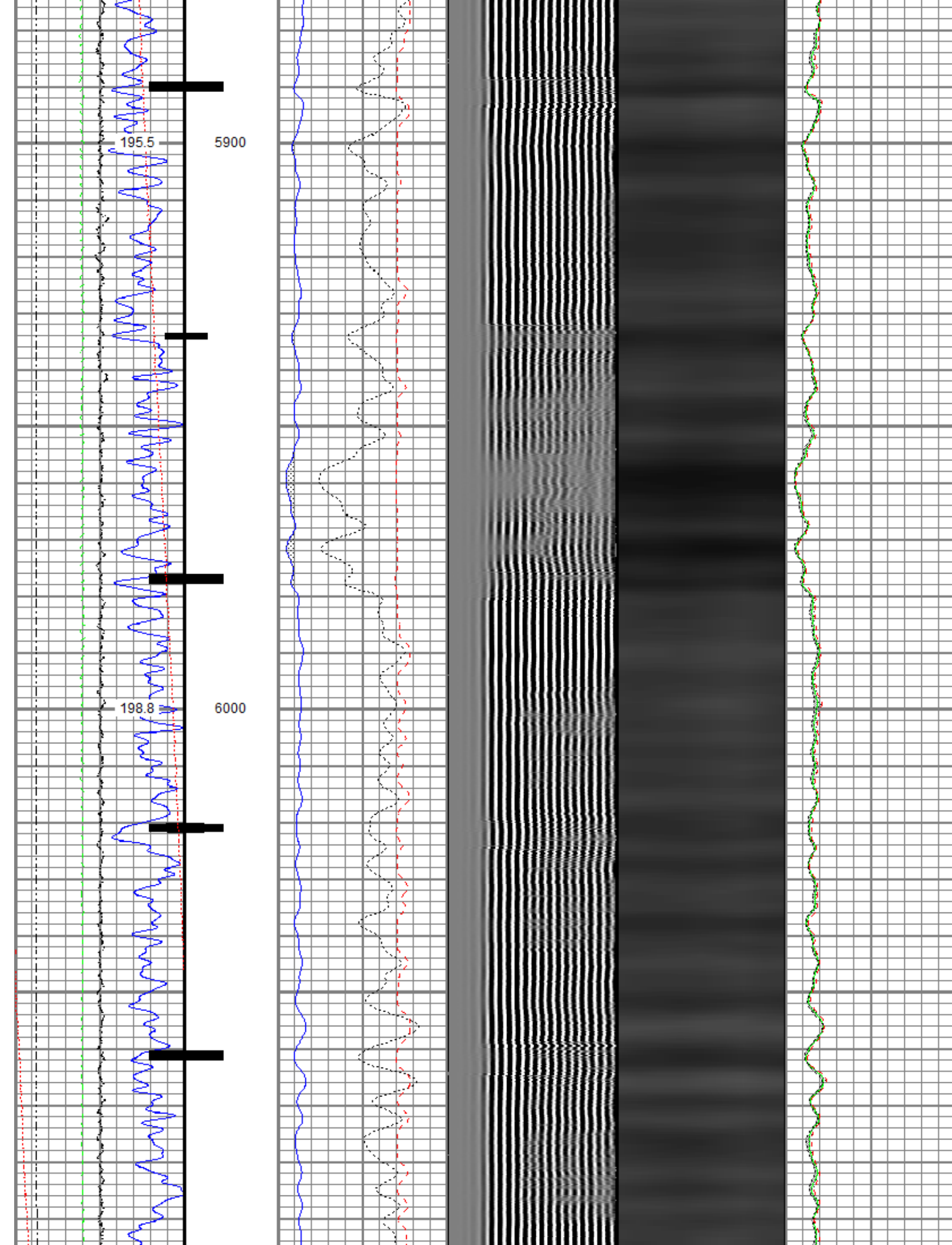


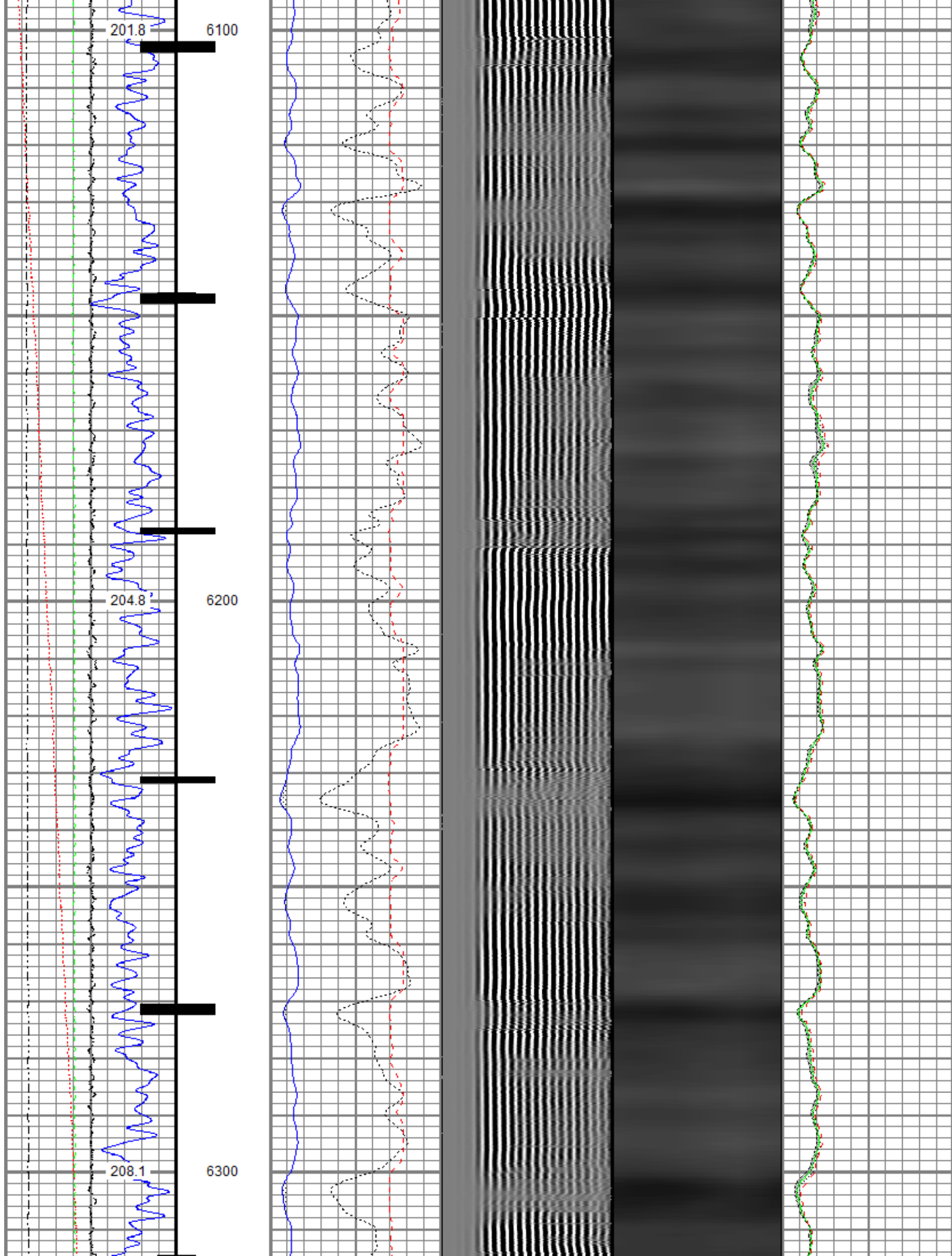


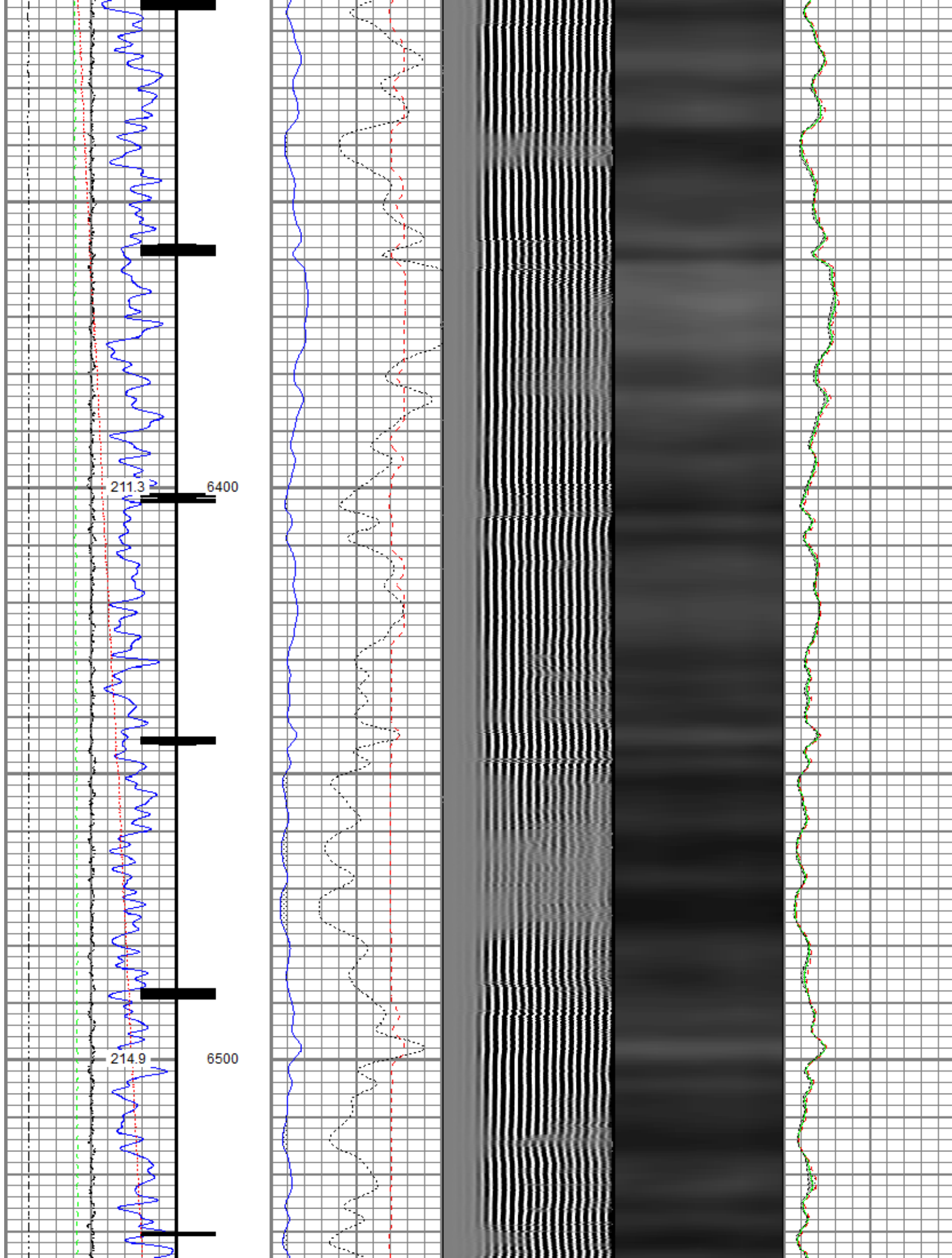


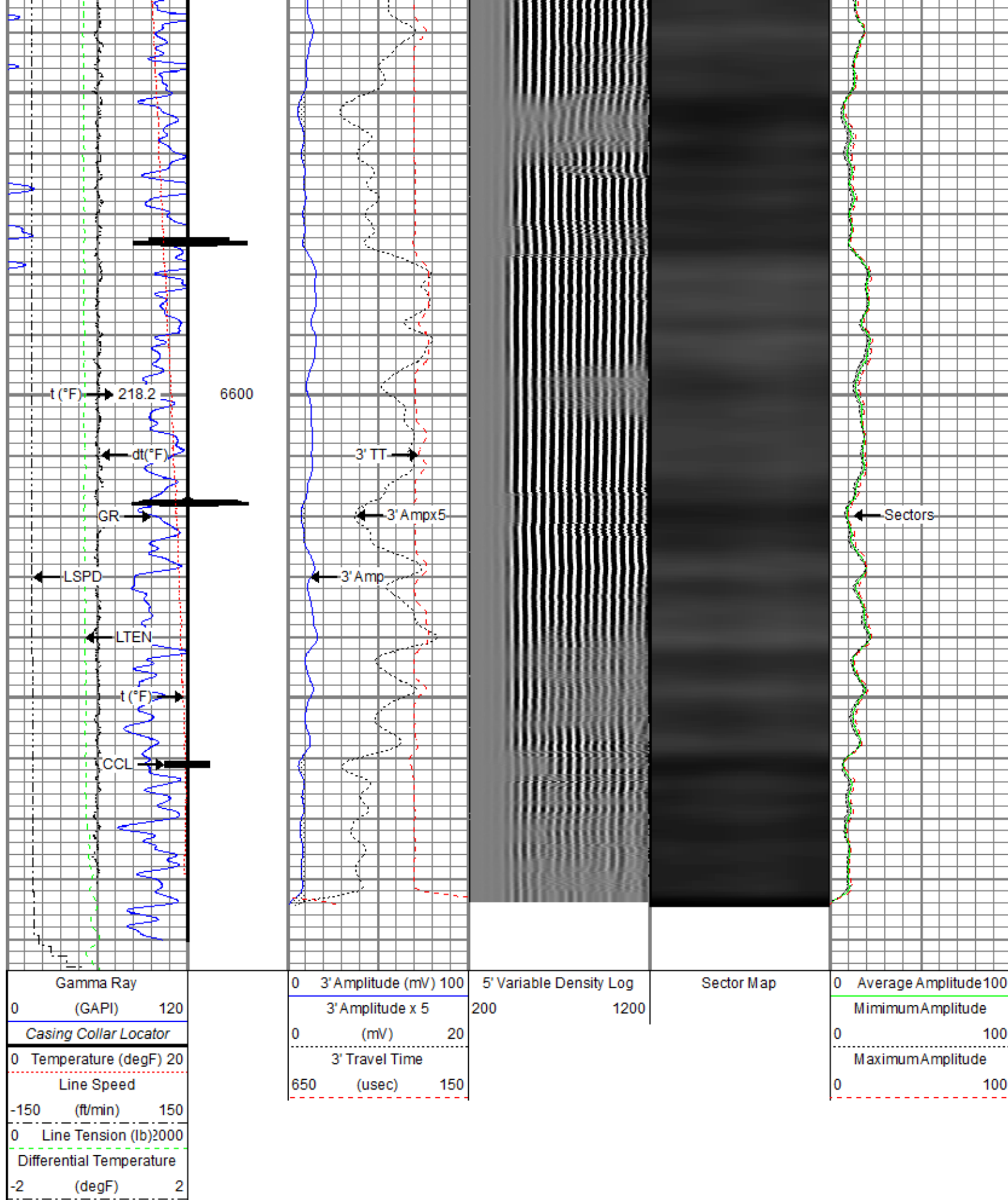










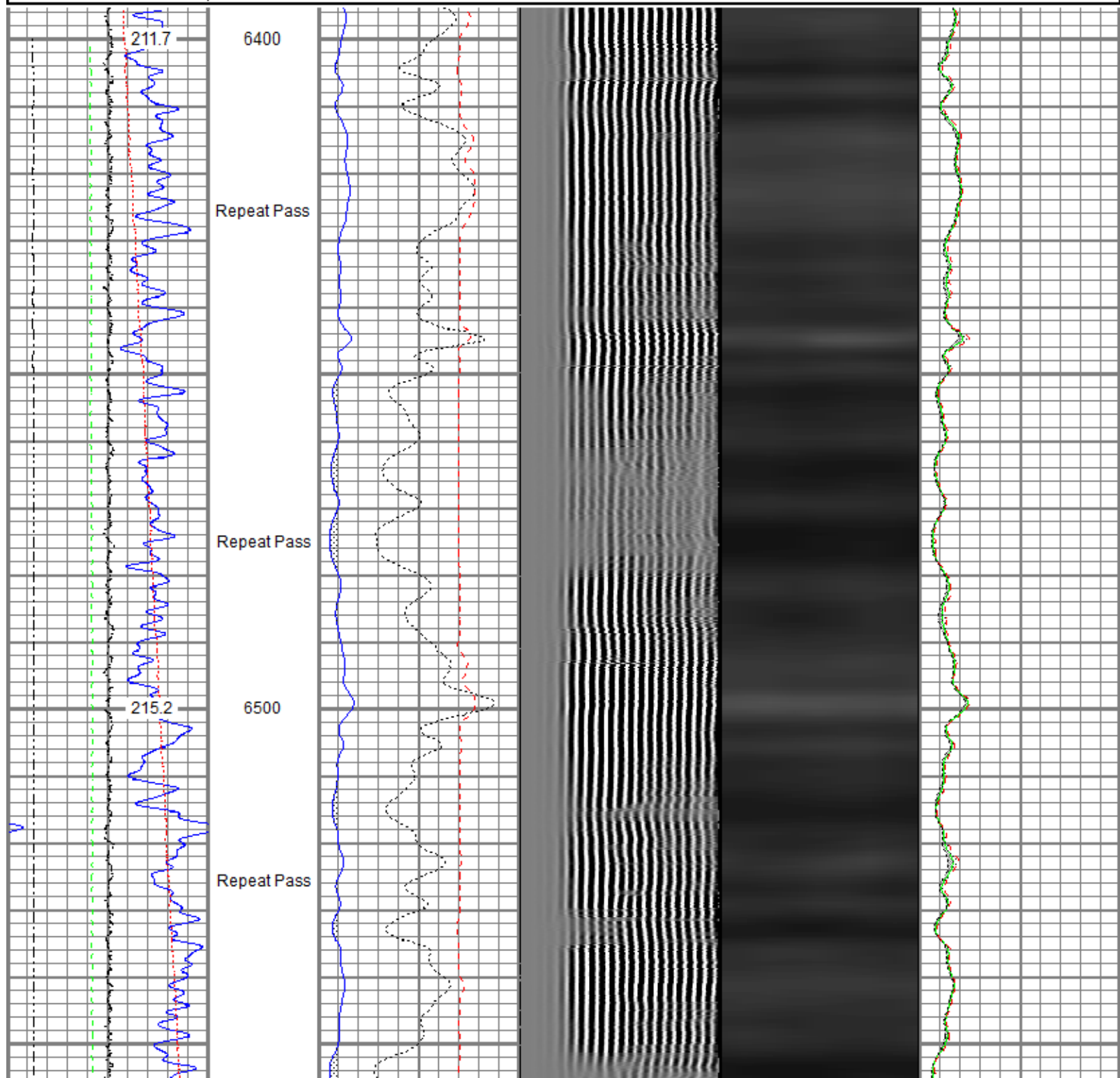


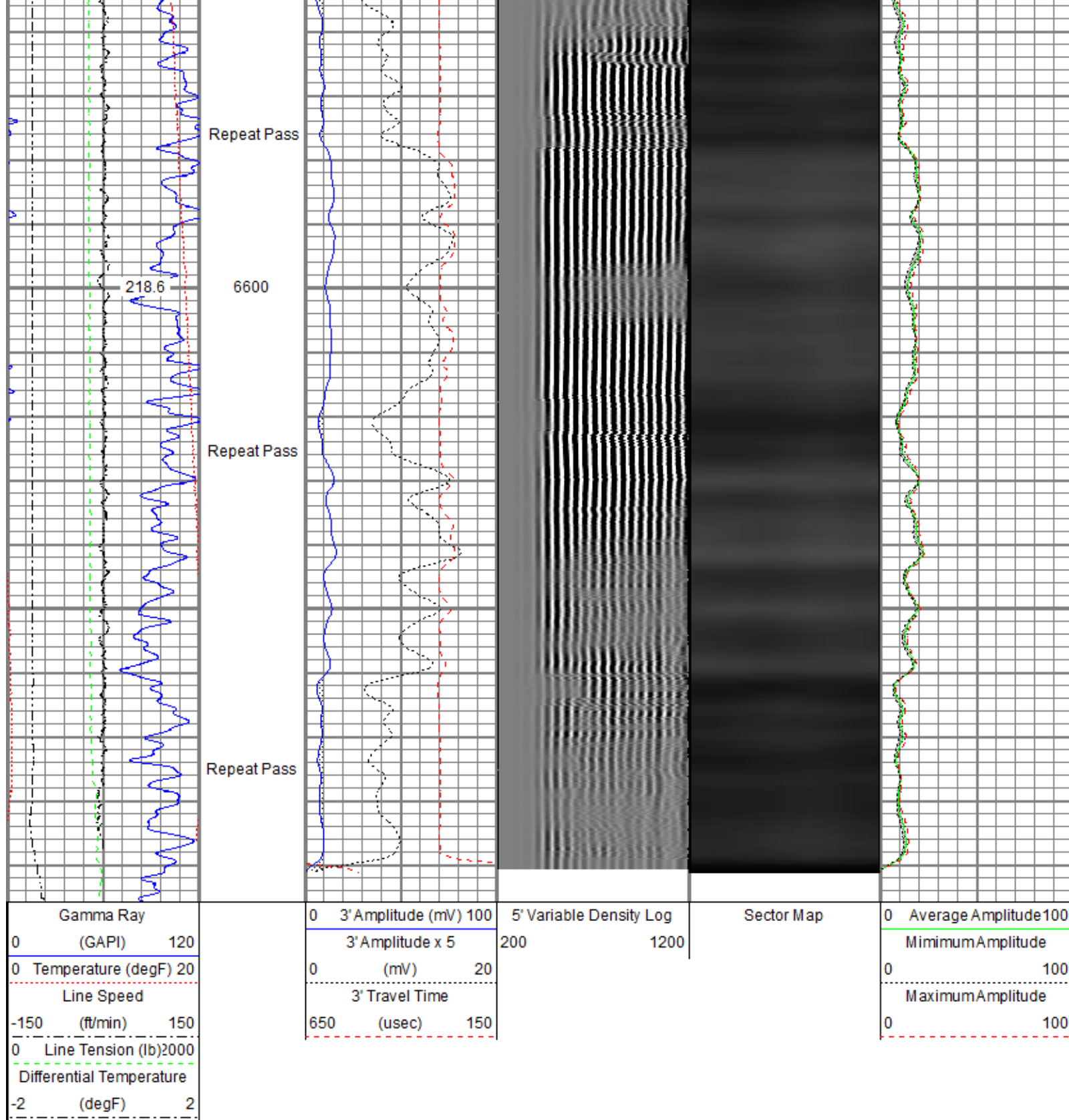
Repeat Pass

Recorded with 2800 PSI Surface Induced Pressure

Database File new folder (2)\0512346115_anadarko_azul 13-21hz_rbl_07-03-18_2800 psi.db
 Dataset Pathname pass2
 Presentation Format ros_radri
 Dataset Creation Tue Jul 03 14:34:49 2018
 Charted by Depth in Feet scaled 1:240

Gamma Ray	0	3' Amplitude (mV) 100	5' Variable Density Log	Sector Map	0	Average Amplitude 100
(GAPI) 120		3' Amplitude x 5	200			Minimum Amplitude
0 Temperature (degF) 20	0	(mV) 20			0	100
Line Speed		3' Travel Time				Maximum Amplitude
-150 (ft/min) 150	650	(usec) 150			0	100
0 Line Tension (lb) 2000						
Differential Temperature						
-2 (degF) 2						





Sensor	Offset (ft)	Schematic	Description	Length (ft)	O.D. (in)	Weight (lb)
			Titan CHD-14375 GO Titan 1-7/16" Assembled Electric Cable Head w/ 1" Fishing Neck	1.03	1.44	3.60
			Probe CENT-2750 Probe 2-3/4" Electric Inline Bowspring Centralizer	2.88	2.75	20.00

TEMP	17.33						
WVFS8	15.09			Probe Radii-2750 RBT (FW1308-091)	9.39	2.75	105.00
WVFS7	15.09			Probe 2-3/4" Radial Cement Bond Tool with Integral Temperature Sub			
WVFS6	15.09						
WVFS5	15.09						
WVFS4	15.09						
WVFS3	15.09						
WVFS2	15.09						
WVFS1	15.09						
WVFCAL	15.09						
WVF3FT	15.09						
WVF5FT	14.09						
HEADVOLT	10.84			Probe CENT-2750	2.88	2.75	20.00
				Probe 2-3/4" Electric Inline Bowspring Centralizer			
CCL\$2	7.08						
CCL\$1	7.08						
GR	5.75			Probe GR-CCL-2750 6PB (101001)	4.80	2.75	55.00
				Probe 2-3/4" rev.1 Digital Scintillation Gamma Ray/CCL Combined with 6 Pin Bottom for CNT			
				Probe ADPT-6P-GO	0.28	2.75	2.00
				Probe 2-3/4" 6-Pin Top to GO Bottom Adaptor Sub			
				Probe CENT-2750	2.88	2.75	20.00
				Probe 2-3/4" Electric Inline Bowspring Centralizer			
Dataset: 0512346115_Anadarko_Azul 13-21HZ_RBL_07-03-18_2800 PSI.db: field/well/run1/pass4							
Total length: 24.15 ft							
Total weight: 225.60 lb							
O.D.: 2.75 in							

Calibration Report	
Database File	C:\ProgramData\Warrior\Data\New folder (2)\0512346115_Anadarko_Azul 13-21HZ_RBL_07-03-18_2800 PSI.db
Dataset Pathname	pass4
Dataset Creation	Tue Jul 03 14:40:59 2018
Gamma Ray Calibration Report	
Serial Number:	101001
Tool Model:	2750 6PB
Performed:	Sun Nov 12 11:25:32 2017

Calibrator Value:	637.0	GAPI
Background Reading:	100.6	cps
Calibrator Reading:	981.1	cps
Sensitivity:	0.7235	GAPI/cps

Segmented Cement Bond Log Calibration Report
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Serial Number:	FW1308-091	
Tool Model:	2750 RBT	
Calibration Casing Diameter:	5.500	in
Calibration Depth:	743.615	ft

Master Calibration, performed (Derived):						
	Raw (v)		Calibrated (mv)		Results	
	Zero	Cal	Zero	Cal	Gain	Offset
3'	0.002	0.695	0.800	71.921	102.704	0.560
CAL	0.006	0.659				
5'	0.001	0.666	0.800	71.921	106.935	0.650
SUM						
S1	0.002	0.667	0.000	100.000	150.504	-0.339
S2	0.003	0.691	0.000	100.000	145.338	-0.372
S3	0.002	0.698	0.000	100.000	143.750	-0.352
S4	0.002	0.694	0.000	100.000	144.605	-0.322
S5	0.002	0.696	0.000	100.000	144.158	-0.297
S6	0.002	0.688	0.000	100.000	145.770	-0.298
S7	0.002	0.681	0.000	100.000	147.171	-0.281
S8	0.002	0.698	0.000	100.000	143.616	-0.272

Internal Reference Calibration, performed (Not Performed):						
	Raw (v)		Calibrated (v)		Results	
	Zero	Cal	Zero	Cal	Gain	Offset
CAL	0.000	0.000	0.006	0.659	1.000	0.000

Air Zero Calibration, performed Sun Jul 01 13:32:00 2018:						
	Raw (v)		Calibrated (v)		Results	
	Zero		Zero		Offset	
3'	0.006		0.000		0.000	
5'	0.006		0.000		0.000	
SUM						
S1	0.006		0.000		0.000	
S2	0.006		0.000		0.000	
S3	0.006		0.000		0.000	
S4	0.006		0.000		0.000	
S5	0.006		0.000		-0.000	
S6	0.006		0.000		-0.000	
S7	0.006		0.000		-0.000	
S8	0.006		0.000		-0.000	

Temperature Calibration Report

Serial Number:	FW1308-091	
Tool Model:	2750 RBT	
Performed:	Sun Nov 12 13:50:54 2017	
	Reference	Reading
Low Reference:	100.00 degF	104.72 degF
High Reference:	350.00 degF	392.24 degF

Gain:	0.87
Offset:	8.94
Delta Spacing	1



Company	Kerr-McGee Oil & Gas Onshore, L.P.
Well	Azul 13-21HZ
Field	Wattenberg
County	Weld
State	Colorado